NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

INDEX OF REPORTS ON AERONAUTICAL RESEARCH

SEPTEMBER 1940

For sale by the Superintendent of Documents, Washington, D. C. - - - - - - - - - - - - - - - Price 10 cents

INDEX OF REPORTS ON AERONAUTICAL RESEARCH

National Advisory Committee for Aeronautics

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

HEADQUARTERS, NAVY BUILDING, WASHINGTON, D. C.

Created by act of Congress approved March 3, 1915, for the supervision and direction of the scientific study of the problems of flight (U. S. Code, Title 50, Sec. 151). Its membership was increased to 15 by act approved March 2, 1929. The members are appointed by the President, and serve as such without compensation.

TECHNICAL COMMITTEES

AERODYNAMICS
POWER PLANTS FOR AIRCRAFT
AIRCRAFT MATERIALS

AIRCRAFT STRUCTURES
AIRCRAFT ACCIDENTS
INVENTIONS AND DESIGNS

Coordination of Research Needs of Military and Civil Aviation

Preparation of Research Programs

Allocation of Problems

Prevention of Duplication

Consideration of Inventions

LANGLEY MEMORIAL AERONAUTICAL LABORATORY

LANGLEY FIELD, VA.

AMES AERONAUTICAL LABORATORY

MOFFETT FIELD, CALIF.

Conduct, under unified control, for all agencies, of scientific research on the fundamental problems of flight.

OFFICE OF AERONAUTICAL INTELLIGENCE

WASHINGTON, D. C.

Collection, classification, compilation, and dissemination of scientific and technical information on aeronautics

9-20-40

CONTENTS

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

This is a classified list of the Reports [1] of the National Advisory Committee for Aeronautics prepared as of September 1940. This list has been prepared in order to make available a more convenient index of the aeronautical research findings of the National Advisory Committee for Aeronautics, and it is not to be considered as a revision of the List of Reports with Prices.[2]

[1] For years of Annual Reports in which these Reports are published, see list below.

[2] For List of Reports with Prices, application should be made to the Office of Aeronautical Intelligence, National Advisory Committee for Aeronautics, Washington, D. C.

ANNUAL REPORTS

	Year	
First	1915	With Reports Nos. 1–7.
Second	1916	With Reports Nos. 8–12.
Third	1917	With Reports Nos. 13–23.
Fourth	1918	With Reports Nos. 24–50.
Fifth	1919	With Reports Nos. 51–82.
Sixth	1920	With Reports Nos. 83–110.
Seventh	1921	With Reports Nos. 111–132.
Eighth	1922	With Reports Nos. 133–158.
Ninth	1923	With Reports Nos. 159–185.
Tenth	1924	With Reports Nos. 186–209.
Eleventh	1925	With Reports Nos. 210–232.
Twelfth	1926	With Reports Nos. 233–256.
Thirteenth	1927	With Reports Nos. 257–282.
Fourteenth	1928	With Reports Nos. 283–308.
Fifteenth	1929	With Reports Nos. 309–336.
Sixteenth	1930	With Reports Nos. 337–364.
Seventeenth	1931	With Reports Nos. 365–400.
Eighteenth	1932	With Reports Nos. 401–440.
Nineteenth	1933	With Reports Nos. 441–474.
Twentieth	1934	With Reports Nos. 475–507.
Twenty-first	1935	With Reports Nos. 508–541.
Twenty-second	1936	With Reports Nos. 542–576.
Twenty-third	1937	With Reports Nos. 577–611.
Twenty-fourth	1938	With Reports Nos. 612–644.
Twenty-fifth	1939	With Reports Nos. 645–680.

NOTE.—Beginning with the sixteenth, the annual reports are bound in buckram only.

INDEX OF REPORTS ON AERONAUTICAL RESEARCH

I. FUNDAMENTAL AERODYNAMICS

GENERAL AND THEORETICAL AERODYNAMICS

REPORTS

No. Title

635. Theoretical Stability and Control Characteristics of Wings with Various Amounts of Taper and Twist. By Henry A. Pearson and Robert T. Jones.

660. Experimental Investigation of the Momentum Method for Determining Profile Drag. By Harry J. Goett.

671. A Theoretical Study of the Moment on a Body in a Compressible Fluid. By Carl Kaplan.

673. Experimental Verification of the Theory of Oscillating Airfoils. By Abe Silverstein and Upshur T. Joyner.

681. The Unsteady Lift of a Wing of Finite Aspect Ratio. By Robert T. Jones.

BOUNDARY LAYER AND TURBULENCE STUDIES

REPORTS

6. Investigations of Balloon and Aeroplane Fabrics. By the United States Rubber Company.
   - Part I. Balloon and Aeroplane Fabrics. By Willis A. Gibbons and Omar H. Smith.
   - Part II. Skin Friction of Various Surfaces in Air. By Willis A. Gibbons.

106. Turbulence in the Air Tubes of Radiators for Aircraft Engines. By S. R. Parsons.

111. The Variation of Aerofoil Lift and Drag Coefficients with Changes in Size and Speed. By Walter S. Diehl.

122. Preliminary Experiments to Determine Scale and Slip-Stream Effects on a ¼th Size Model of a JN4H Biplane. By D. L. Bacon.

139. Influence of Model Surface and Air Flow Texture on Resistance of Aerodynamic Bodies. By A. F. Zahm.

320. The Measurement of Fluctuations of Air Speed by the Hot-Wire Anemometer. By H. L. Dryden and A. M. Kuethe.

342. Effect of Turbulence in Wind Tunnel Measurements. By H. L. Dryden and A. M. Kuethe.

No. Title

385. Wind Tunnel Tests on Airfoil Boundary Layer Control Using a Backward-Opening Slot. By Millard J. Bamber.

392. Reduction of Turbulence in Wind Tunnels. By Hugh L. Dryden.

430. Measurements of Flow in the Boundary Layer of a 1/40-Scale Model of the U. S. Airship *Akron*. By Hugh B. Freeman.

448. Improved Apparatus for the Measurement of Fluctuations of Air Speed in Turbulent Flow. By W. C. Mock, Jr., and H. L. Dryden.

497. Computation of the Two-Dimensional Flow in a Laminar Boundary Layer. By Hugh L. Dryden.

504. On the Theory of Laminar Boundary Layers Involving Separation. By Th. von Karman and Clark B. Millikan.

524. A Turbulence Indicator Utilizing the Diffusion of Heat. By G. B. Schubauer.

527. Air Flow in a Separating Laminar Boundary Layer. By G. B. Schubauer.

546. The Effect of Turbulence on the Drag of Flat Plates. By G. B. Schubauer and H. L. Dryden.

558. Turbulence Factors of N. A. C. A. Wind Tunnels as Determined by Sphere Tests. By Robert C. Platt.

562. Air Flow in the Boundary Layer near a Plate. By Hugh L. Dryden.

581. Measurements of Intensity and Scale of Wind-Tunnel Turbulence and Their Relation to the Critical Reynolds Number of Spheres. By Hugh L. Dryden, G. B. Schubauer, W. C. Mock, Jr., and H. K. Skramstad.

598. Alternating-Current Equipment for the Measurement of Fluctuations of Air Speed in Turbulent Flow. By W. C. Mock, Jr.

637. Determination of Boundary-Layer Transition on Three Symmetrical Airfoils in the N. A. C. A. Full-Scale Wind Tunnel. By Abe Silverstein and John V. Becker.

652. Air Flow in the Boundary Layer of an Elliptic Cylinder. By G. B. Schubauer.

II. APPLIED AERODYNAMICS

WING SECTIONS

REPORTS

No. Title

18. Aerofoils and Aerofoil Structural Combinations. By Edgar S. Gorrell and H. S. Martin.
28. An Introduction to the Study of the Laws of Air Resistance of Aerofoils. By George deBothezat.
75. The Aerodynamic Properties of Thick Aerofoils Suitable for Internal Bracing. By H. F. Norton.
77. The Parker Variable Camber Wing. By H. F. Parker.
83. Wind Tunnel Studies in Aerodynamic Phenomena at High Speed. By F. W. Caldwell and E. N. Fales.
93. Aerodynamic Characteristics of Airfoils—I. By National Advisory Committee for Aeronautics.
111. The Variation of Aerofoil Lift and Drag Coefficients with Changes in Size and Speed. By Walter S. Diehl.
124. Aerodynamic Characteristics of Aerofoils—II. By National Advisory Committee for Aeronautics.
137. Point Drag and Total Drag of Navy Struts No. 1 Modified. By A. F. Zahm, R. H. Smith, and G. C. Hill.
142. General Theory of Thin Wing Sections. By Max M. Munk.
150. Pressure Distribution over Thick Aerofoils—Model Tests. By F. H. Norton and D. L. Bacon.
152. The Aerodynamic Properties of Thick Aerofoils—II. By F. H. Norton and D. L. Bacon.
182. Aerodynamic Characteristics of Airfoils—III. By National Advisory Committee for Aeronautics.
191. Elements of the Wing Section Theory and of the Wing Theory. By Max M. Munk.
201. The Effects of Shielding the Tips of Airfoils. By Elliott G. Reid.
207. Aerodynamic Characteristics of Airfoils at High Speeds. By L. J. Briggs, G. F. Hull, and H. L. Dryden.
217. Preliminary Wing Model Tests in the Variable Density Wind Tunnel of the National Advisory Committee for Aeronautics. By Max M. Munk.
221. Model Tests with a Systematic Series of 27 Wing Sections at Full Reynolds Number. By Max M. Munk and Elton W. Miller.
233. The Aerodynamic Characteristics of Seven Frequently Used Wing Sections at Full Reynolds Number. By Max M. Munk and Elton W. Miller.
244. Aerodynamic Characteristics of Airfoils—IV. By National Advisory Committee for Aeronautics.
255. Pressure Distribution over Airfoils at High Speeds. By L. J. Briggs and H. L. Dryden.
259. Characteristics of Propeller Sections Tested in the Variable Density Wind Tunnel. By Eastman N. Jacobs.
286. Aerodynamic Characteristics of Airfoils—V. By National Advisory Committee for Aeronautics.
309. Joint Report on Standardization Tests on N. P. L. R. A. F. 15 Airfoil Model. By Walter S. Diehl.
312. The Prediction of Airfoil Characteristics. By George J. Higgins.
315. Aerodynamic Characteristics of Airfoils—VI. By National Advisory Committee for Aeronautics.

No. Title

319. Aerodynamic Characteristics of Twenty-Four Airfoils at High Speeds. By L. J. Briggs and H. L. Dryden.
331. Collection of Wind Tunnel Data on Commonly Used Wing Sections. By F. A. Louden.
336. Tests of Large Airfoils in the Propeller Research Tunnel, including Two with Corrugated Surfaces. By Donald H. Wood.
352. Large-Scale Aerodynamic Characteristics of Airfoils as Tested in the Variable Density Wind Tunnel. By Eastman N. Jacobs and Raymond F. Anderson.
353. Airfoil Pressure Distribution Investigation in the Variable Density Wind Tunnel. By Eastman N. Jacobs, John Stack, and Robert M. Pinkerton.
362. An Extended Theory of Thin Airfoils and Its Application to the Biplane Problem. By Clark B. Millikan.
365. Aerodynamic Characteristics of Circular-Arc Airfoils at High Speeds. By L. J. Briggs and H. L. Dryden.
383. On the Theory of Wing Sections with Particular Reference to the Lift Distribution. By Theodore Theodorsen.
391. The Aerodynamic Characteristics of Eight Very Thick Airfoils from Tests in the Variable Density Wind Tunnel. By Eastman N. Jacobs.
411. Theory of Wing Sections of Arbitrary Shape. By Theodore Theodorsen.
446. Airfoil Section Characteristics as Affected by Protuberances. By Eastman N. Jacobs.
452. General Potential Theory of Arbitrary Wing Sections. By T. Theodorsen and I. E. Garrick.
460. The Characteristics of 78 Related Airfoil Sections from Tests in the Variable-Density Wind Tunnel. By Eastman N. Jacobs, Kenneth E. Ward, and Robert M. Pinkerton.
461. Interference on an Airfoil of Finite Span in an Open Rectangular Wind Tunnel. By Theodore Theodorsen.
463. The N. A. C. A. High-Speed Wind Tunnel and Tests of Six Propeller Sections. By John Stack.
465. Determination of the Theoretical Pressure Distribution for Twenty Airfoils. By I. E. Garrick.
478. Experimental Verification of the Theory of Wind-Tunnel Boundary Interference. By Theodore Theodorsen and Abe Silverstein.
492. Tests of 16 Related Airfoils at High Speeds. By John Stack and Albert E. von Doenhoff.
502. Scale Effect on Clark Y Airfoil Characteristics from N. A. C. A. Full-Scale Wind-Tunnel Tests. By Abe Silverstein.
530. Characteristics of the N. A. C. A. 23012 Airfoil from Tests in the Full-Scale and Variable-Density Tunnels. By Eastman N. Jacobs and William C. Clay.
537. Tests in the Variable-Density Wind Tunnel of Related Airfoils Having the Maximum Camber Unusually Far Forward. By Eastman N. Jacobs and Robert M. Pinkerton.
542. Potential Flow about Arbitrary Biplane Wing Sections. By I. E. Garrick.
563. Calculated and Measured Pressure Distribution over the Midspan Section of the N. A. C. A. 4412 Airfoil. By Robert M. Pinkerton.

No. Title

567. Propulsion of a Flapping and Oscillating Airfoil. By I. E. Garrick.
586. Airfoil Section Characteristics as Affected by Variations of the Reynolds Number. By Eastman N. Jacobs and Albert Sherman.
610. Tests of Related Forward-Camber Airfoils in the Variable-Density Wind Tunnel. By Eastman N. Jacobs, Robert M. Pinkerton, and Harry Greenberg.
613. The Variation with Reynolds Number of Pressure Distribution over an Airfoil Section. By Robert M. Pinkerton.
621. Compressible Flow about Symmetrical Joukowski Profiles. By Carl Kaplan.
628. Aerodynamic Characteristics of a Large Number of Airfoils Tested in the Variable-Density Wind Tunnel. By Robert M. Pinkerton and Harry Greenberg.
631. Airfoil Section Characteristics as Applied to the Prediction of Air Forces and Their Distribution on Wings. By Eastman N. Jacobs and R. V. Rhode.
637. Determination of Boundary-Layer Transition on Three Symmetrical Airfoils in the N. A. C. A. Full-Scale Wind Tunnel. By Abe Silverstein and John V. Becker.
646. The Compressibility Burble and the Effect of Compressibility on Pressures and Forces Acting on an Airfoil. By John Stack, W. F. Lindsey, and Robert E. Littell.
647. Tests of N. A. C. A. 0009, 0012, and 0018 Airfoils in the Full-Scale Tunnel. By Harry J. Goett and W. Kenneth Bullivant.
650. The Aerodynamic Characteristics of Six Full-Scale Propellers Having Different Airfoil Sections. By David Biermann and Edwin P. Hartman.
669. Airfoil Section Data Obtained in the N. A. C. A. Variable-Density Tunnel as Affected by Support Interference and Other Corrections. By Eastman N. Jacobs and Ira H. Abbott.
673. Experimental Verification of the Theory of Oscillating Airfoils. By Abe Silverstein and Upshur T. Joyner.

AUXILIARY-LIFT DEVICES

REPORTS

260. The Effect of a Flap and Ailerons on the N. A. C. A. M–6 Airfoil Section. By George J. Higgins and Eastman N. Jacobs.
360. Pressure Distribution over a Symmetrical Airfoil Section with Trailing Edge Flap. By Eastman N. Jacobs and Robert M. Pinkerton.
400. The Aerodynamic Characteristics of a Slotted Clark Y Wing as Affected by the Auxiliary Airfoil Position. By Carl J. Wenzinger and Joseph A. Shortal.
407. The Characteristics of a Clark Y Wing Model Equipped with Several Forms of Low-Drag Fixed Slots. By Fred E. Wieck and Carl J. Wenzinger.
427. The Effect of Multiple Fixed Slots and a Trailing-Edge Flap on the Lift and Drag of a Clark Y Airfoil. By Fred E. Weick and Joseph A. Shortal.
428. Wind-Tunnel Tests of a Clark Y Wing with a Narrow Auxiliary Airfoil in Different Positions. By Fred E. Weick and Millard J. Bamber.
472. Wind-Tunnel Tests on Combinations of a Wing with Fixed Auxiliary Airfoils Having Various Chords and Profiles. By Fred E. Weick and Robert Sanders.
534. Aerodynamic Characteristics of a Wing with Fowler Flaps including Flap Loads, Downwash, and Calculated Effect on Take-Off. By Robert C. Platt.
539. Investigation of Full-Scale Split Trailing-Edge Wing Flaps with Various Chords and Hinge Locations. By Rudolf Wallace.

No. Title

541. Aerodynamic Characteristics of Wings and Cambered External-Airfoil Flaps, including Lateral Control with a Full-Span Flap. By Robert C. Platt.
549. Wind-Tunnel Investigation of the Aerodynamic Balancing of Upper-Surface Ailerons and Split Flaps. By Carl J. Wenzinger.
554. Wind-Tunnel Investigation of Ordinary and Split Flaps on Airfoils of Different Profile. By Carl J. Wenzinger.
573. Aerodynamic Characteristics of N. A. C. A. 23012 and 23021 Airfoils with 20-Percent-Chord External-Airfoil Flaps of N. A. C. A. 23012 Section. By Robert C. Platt and Ira H. Abbott.
574. Pressure Distribution over an Airfoil Section with a Flap and Tab. By Carl J. Wenzinger.
603. Wind-Tunnel Investigation of Wings with Ordinary Ailerons and Full-Span External-Airfoil Flaps. By Robert C. Platt and Joseph A. Shortal.
611. Wind-Tunnel Investigation of Tapered Wings with Ordinary Ailerons and Partial-Span Split Flaps. By Carl J. Wenzinger.
614. Pressure Distribution over an N. A. C. A. 23012 Airfoil with an N. A. C. A. 23012 External-Airfoil Flap. By Carl J. Wenzinger.
620. Pressure Distribution over Airfoils with Fowler Flaps. By Carl J. Wenzinger and W. B. Anderson.
633. Pressure Distribution over an N. A. C. A. 23012 Airfoil with a Slotted and a Plain Flap. By Carl J. Wenzinger and James B. Delano.
661. Tests in the Variable-Density Wind Tunnel of the N. A. C. A. 23012 Airfoil with Plain and Split Flaps. By Ira H. Abbott and Harry Greenberg.
664. Wind-Tunnel Investigation of an N. A. C. A. 23012 Airfoil with Various Arrangements of Slotted Flaps. By Carl J. Wenzinger and Thomas A. Harris.
665. Calculation of the Aerodynamic Characteristics of Tapered Wings with Partial-Span Flaps. By Henry A. Pearson and Raymond F. Anderson.
668. Wind-Tunnel Investigation of N. A. C. A. 23012, 23021, and 23030 Airfoils with Various Sizes of Split Flap. By Carl J. Wenzinger and Thomas A. Harris.
677. Wind-Tunnel Investigation of an N. A. C. A. 23021 Airfoil with Various Arrangements of Slotted Flaps. By Carl J. Wenzinger and Thomas A. Harris.
679. Wind-Tunnel Investigation of N. A. C. A. 23012 Airfoil with a Slotted Flap and Three Types of Auxiliary Flap. By Carl J. Wenzinger and William E. Gauvain.

COMPLETE WINGS

REPORTS

121. The Minimum Induced Drag of Aerofoils. By Max M. Munk.
140. Lift and Drag Effects on Wing Tip-Rake. By A. F. Zahm, R. M. Bear, and G. C. Hill.
161. The Distribution of Lift over Wing Tips and Ailerons. By David L. Bacon.
191. Elements of the Wing Section Theory and of the Wing Theory. By Max M. Munk.
193. Pressure Distribution over the Wings of an MB–3 Airplane Fin light. By F. H. Norton.
197. A New Relation between the Induced Yawing Moment and the Rolling Moment of an Airfoil in Straight Motion. By Max M. Munk.
200. Some Problems on the Lift and Rolling Moment of Airplane Wings. By Jas. B. Scarborough.
201. The Effects of Shielding the Tips of Airfoils. By Elliott G. Reid.

No. Title

217. Preliminary Wing Model Tests in the Variable Density Wind Tunnel of the National Advisory Committee for Aeronautics. By Max M. Munk.
229. Pressure Distribution over Thick, Tapered Airfoils, N. A. C. A. 81, U. S. A. 27 C Modified, and U. S. A. 35. By Elliott G. Reid.
254. Distribution of Pressure over Model of the Upper Wing and Aileron of a Fokker D–VII Airplane. By A. J. Fairbanks.
256. The Air Forces on a Systematic Series of Biplane and Triplane Cellule Models. By Max M. Munk.
257. Pressure Distribution over a Wing and Tail Rib of a VE–7 and of a TS Airplane in Flight. By J. W. Crowley, Jr.
260. The Effect of a Flap and Ailerons on the N. A. C. A. M–6 Airfoil Section. By George J. Higgins and Eastman N. Jacobs.
266. Air Force and Moment for N–20 Wing with Certain Cut-Outs. By R. H. Smith.
267. Drag of Wings with End Plates. By Paul E. Hemke.
269. Air Force Tests of Sperry Messenger Model with Six Sets of Wings. By James M. Shoemaker.
288. Pressure Distribution over a Rectangular Monoplane Wing Model up to 90° Angle of Attack. By Montgomery Knight and Oscar E. Loeser, Jr.
296. Pressure Distribution Tests on PW–9 Wing Models from −18° through 90° Angle of Attack. By Oscar E. Loeser, Jr.
304. An Investigation of the Aerodynamic Characteristics of an Airplane Equipped with Several Different Sets of Wings. By J. W. Crowley Jr., and M. W. Green.
317. Wind Tunnel Tests on a Series of Wing Models through a Large Angle of Attack Range. Part I. Force Tests. By Montgomery Knight and Carl J. Wenzinger.
349. A Proof of the Theorem Regarding the Distribution of Lift over the Span for Minimum Induced Drag. By W. F. Durand.
364. The Pressure Distribution over the Wings and Tail Surfaces of a PW–9 Pursuit Airplane in Flight. By Richard V. Rhode.
367. Pressure Distribution over a Thick, Tapered and Twisted Monoplane Wing Model—N. A. C. A. 81–J. By Carl J. Wenzinger.
379. Rolling Moments Due to Rolling and Yaw for Four Wing Models in Rotation. By Montgomery Knight and Carl J. Wenzinger.
417. Pressure Distribution Tests on a Series of Clark Y Biplane Cellules with Special Reference to Stability. By Richard W. Noyes.
431. Characteristics of Clark Y Airfoils of Small Aspect Ratios. By C. H. Zimmerman.
445. Working Charts for the Determination of the Lift Distribution between Biplane Wings. By Paul Kuhn.
449. Wing Characteristics as Affected by Protuberances of Short Span. By Eastman Jacobs and Albert Sherman.
480. The Aerodynamic Effects of Wing Cut-Outs. By Albert Sherman.
482. Wing-Fuselage Interference, Tail Buffeting, and Air Flow about the Tail of a Low-Wing Monoplane. By James A. White and Manley J. Hood.
489. Air Conditions Close to the Ground and the Effect on Airplane Landings. By F. L. Thompson, W. C. Peck, and A. P. Beard.
500. The Influence of Tip Shape on the Wing Load Distribution as Determined by Flight Tests. By Richard V. Rhode.
501. Relative Loading on Biplane Wings of Unequal Chords. By Walter S. Diehl.

256411—40——2

No. Title

519. Spinning Characteristics of Wings. I—Rectangular Clark Y Monoplane Wing. By M. J. Bamber and C. H. Zimmerman.
540. Interference of Wing and Fuselage from Tests of 209 Combinations in the N. A. C. A. Variable-Density Tunnel. By Eastman N. Jacobs and Kenneth E. Ward.
548. Effect of Tip Shape and Dihedral on Lateral-Stability Characteristics. By Joseph A. Shortal.
571. Pressure Distribution over a Rectangular Airfoil with a Partial-Span Split Flap. By Carl J. Wenzinger and Thomas A. Harris.
572. Determination of the Characteristics of Tapered Wings. By Raymond F. Anderson.
575. Interference of Wing and Fuselage from Tests of 28 Combinations in the N. A. C. A. Variable-Density Tunnel. By Albert Sherman.
585. Span Load Distribution for Tapered Wings with Partial-Span Flaps. By H. A. Pearson.
603. Wind-Tunnel Investigation of Wings with Ordinary Ailerons and Full-Span External-Airfoil Flaps. By Robert C. Platt and Joseph A. Shortal.
611. Wind-Tunnel Investigation of Tapered Wings with Ordinary Ailerons and Partial-Span Split Flaps. By Carl J. Wenzinger.
618. Comparative Flight and Full-Scale Wind-Tunnel Measurements of the Maximum Lift of an Airplane. By Abe Silverstein, S. Katzoff, and James A. Hootman.
627. The Experimental and Calculated Characteristics of 22 Tapered Wings. By Raymond F. Anderson.
630. A Flight Comparison of Conventional Ailerons on a Rectangular Wing and of Conventional And Floating Wing-Tip Ailerons on a Tapered Wing. By H. A. Soulé and W. Gracey.
631. Airfoil Section Characteristics as Applied to the Prediction of Air Forces and Their Distribution on Wings. By Eastman N. Jacobs and R. V. Rhode.
635. Theoretical Stability and Control Characteristics of Wings with Various Amounts of Taper and Twist. By Henry A. Pearson and Robert T. Jones.
648. Design Charts for Predicting Downwash Angles and Wake Characteristics behind Plain and Flapped Wings. By Abe Silverstein and S. Katzoff.
651. Downwash and Wake behind Plain and Flapped Airfoils. By Abe Silverstein, S. Katzoff, and W. Kenneth Bullivant.
665. Calculation of the Aerodynamic Characteristics of Tapered Wings with Partial-Span Flaps. By Henry A. Pearson and Raymond F. Anderson.
667. Determination of the Profile Drag of an Airplane Wing in Flight at High Reynolds Numbers. By Joseph Bicknell.
678. Interference of Tail Surfaces and Wing and Fuselage from Tests of 17 Combinations in the N. A. C. A. Variable-Density Tunnel. By Albert Sherman.

FUSELAGE AND HULL SHAPES

REPORTS

76. Analysis of Fuselage Stresses. By Edward P. Warner and Roy G. Miller.
236. Tests on Airplane Fuselages, Floats and Hulls. By Walter S. Diehl.
313. Drag and Cooling with Various Forms of Cowling for a "Whirlwind" Radial Air-Cooled Engine—I. By Fred E. Weick.
380. Pressure Distribution over the Fuselage of a PW–9 Airplane in Flight. By R. V. Rhode and Eugene E. Lundquist.

No. Title

394. Airship Model Tests in the Variable Density Wind Tunnel. By Ira H. Abbott.
437. The Effect of Area and Aspect Ratio on the Yawing Moments of Rudders at Large Angles of Pitch on Three Fuselages. By Hugh L. Dryden and B. H. Monish.
451. The Drag of Two Streamline Bodies as Affected by Protuberances and Appendages. By Ira H. Abbott.
482. Wing-Fuselage Interference, Tail Buffeting and Air Flow about the Tail of a Low-Wing Monoplane. By James A. White and Manley J. Hood.
498. Improved Airplane Windshields to Provide Vision in Stormy Weather. By William C. Clay.
516. Potential Flow about Elongated Bodies of Revolution. By Carl Kaplan.
540. Interference of Wing and Fuselage from Tests of 209 Combinations in the N. A. C. A. Variable-Density Tunnel. By Eastman N. Jacobs and Kenneth E. Ward.
575. Interference of Wing and Fuselage from Tests of 28 Combinations in the N. A. C. A. Variable-Density Tunnel. By Albert Sherman.
625. A Discussion of Certain Problems Connected with the Design of Hulls of Flying Boats and the Use of General Test Data. By Walter S. Diehl.
678. Interference of Tail Surfaces and Wing and Fuselage from Tests of 17 Combinations in the N. A. C. A. Variable-Density Tunnel. By Albert Sherman.

COWLING AND NACELLES

REPORTS

61. Head Resistance Due to Radiators.
    Part I. Head Resistance of Radiator Cores. By R. V. Kleinschmidt and S. R. Parsons.
    Part II. Preliminary Report on Resistance Due to Nose Radiator. By R. V. Kleinschmidt.
    Part III. Effect of Streamline Casing for Free-Air Radiators. By S. R. Parsons.
88. Pressure Drop in Radiator Air Tubes. By S. R. Parsons.
313. Drag and Cooling with Various Forms of Cowling for a "Whirlwind" Radial Air-Cooled Engine—I. By Fred E. Weick.
314. Drag and Cooling with Various Forms of Cowling for a "Whirlwind" Radial Air-Cooled Engine—II. By Fred E. Weick.
332. The Effect of Cowling on Cylinder Temperatures and Performance of a Wright J-5 Engine. By Oscar W. Schey and Arnold E. Biermann.
414. The Effect on Airplane Performance of the Factors that Must Be Considered in Applying Low-Drag Cowling to Radial Engines. By William H. McAvoy, Oscar W. Schey, and Alfred W. Young.
415. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. Part I. Thick Wing—N. A. C. A. Cowled Nacelle—Tractor Propeller. By Donald H. Wood.
436. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. II.—Thick Wing—Various Radial-Engine Cowlings—Tractor Propeller. By Donald H. Wood.
462. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. III.—Clark Y Wing—Various Radial-Engine Cowlings—Tractor Propeller. By Donald H. Wood.

No. Title

505. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. IV.—Thick Wing—Various Radial-Engine Cowlings—Tandem Propellers. By James G. McHugh.
506. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. V.—Clark Y Biplane Cellule—N. A. C. A. Cowled Nacelle—Tractor Propeller. By Floyd Valentine.
507. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. VI.—Wings and Nacelles with Pusher Propellers. By Donald H. Wood and Carlton Bioletti.
564. Tests of a Wing-Nacelle-Propeller Combination at Several Pitch Settings up to 42°. By Ray Windler.
569. Wing-Nacelle-Propeller Interference for Wings of Various Spans. Force and Pressure-Distribution Tests. By Russell G. Robinson and William H. Herrnstein, Jr.
592. Full-Scale Tests of N. A. C. A. Cowlings. By Theodore Theodorsen, M. J. Brevoort, and George W. Stickle.
593. Cooling of Airplane Engines at Low Air Speeds. By Theodore Theodorsen, M. J. Brevoort, and George W. Stickle.
595. Full-Scale Tests of a New Type N. A. C. A. Nose-Slot Cowling. By Theodore Theodorsen, M. J. Brevoort, George W. Stickle, and M. N. Gough.
596. Cooling Tests of a Single-Row Radial Engine with Several N. A. C. A. Cowlings. By M. J. Brevoort, George W. Stickle, and Herman H. Ellerbrock, Jr.
642. Tests of Five Full-Scale Propellers in the Presence of a Radial and a Liquid-Cooled Engine Nacelle, Including Tests of Two Spinners. By David Biermann and Edwin P. Hartman.
662. Design of N. A. C. A. Cowlings for Radial Air-Cooled Engines. By George W. Stickle.
674. Cooling on the Front of an Air-Cooled Engine Cylinder in a Conventional Engine Cowling. By M. J. Brevoort and U. T. Joyner.
680. The Effect of Nacelle-Propeller Diameter Ratio on Body Interference and on Propeller and Cooling Characteristics. By James G. McHugh and Eldridge H. Derring.

TAIL SURFACES

REPORTS

118. The Pressure Distribution over the Horizontal Tail Surfaces of an Airplane. By F. H. Norton.
119. The Pressure Distribution over the Horizontal Tail Surfaces of an Airplane, II. By F. H. Norton and D. L. Bacon.
133. The Tail Plane. By Max M. Munk.
136. Damping Coefficients Due to Tail Surfaces in Aircraft. By Lynn Chu.
148. The Pressure Distribution over the Horizontal Tail Surfaces of an Airplane, III. By F. H. Norton and W. G. Brown.
149. Pressure Distribution over the Rudder and Fin of an Airplane in Flight. By F. H. Norton and W. G. Brown.
257. Pressure Distribution over a Wing and Tail Rib of a VE-7 and of a TS Airplane in Flight. By J. W. Crowley, Jr.
278. Lift, Drag, and Elevator Hinge Moments of Handley Page Control Surfaces. By R. H. Smith.

No. Title

293. Two Practical Methods for the Calculation of the Horizontal Tail Area Necessary for a Statically Stable Airplane. By Walter S. Diehl.

307. The Pressure Distribution over the Horizontal and Vertical Tail Surfaces of the F6C–4 Pursuit Airplane in Violent Maneuvers. By R. V. Rhode.

364. The Pressure Distribution over the Wings and Tail Surfaces of a PW–9 Pursuit Airplane in Flight. By Richard V. Rhode.

437. The Effect of Area and Aspect Ratio on the Yawing Moments of Rudders at Large Angles of Pitch on Three Fuselages. By Hugh L. Dryden and B. H. Monish.

482. Wing-Fuselage Interference, Tail Buffeting, and Air Flow about the Tail of a Low-Wing Monoplane. By James A. White and Manley J. Hood.

529. A Flight Investigation of the Spinning of the F4B–2 Biplane with Various Loads and Tail Surfaces. By N. F. Scudder and Oscar Seidman.

604. Pressure-Distribution Measurements at Large Angles of Pitch on Fins of Different Span-Chord Ratio on a 1/40-Scale Model of the U. S. Airship *Akron*. By James G. McHugh.

648. Design Charts for Predicting Downwash Angles and Wake Characteristics behind Plain and Flapped Wings. By Abe Silverstein and S. Katzoff.

651. Downwash and Wake behind Plain and Flapped Airfoils. By Abe Silverstein, S. Katzoff, and W. Kenneth Bullivant.

675. Effects of Elevator Nose Shape, Gap, Balance, and Tabs on the Aerodynamic Characteristics of a Horizontal Tail Surface. By Harry J. Goett and J. P. Reeder.

678. Interference of Tail Surfaces and Wing and Fuselage from Tests of 17 Combinations in the N. A. C. A. Variable-Density Tunnel. By Albert Sherman.

LANDING GEAR

REPORTS

485. The Drag of Airplane Wheels, Wheel Fairings, and Landing Gears—I. By William H. Herrnstein, Jr., and David Biermann.

518. The Drag of Airplane Wheels, Wheel Fairings, and Landing Gears. II—Nonretractable and Partly Retractable Landing Gears. By David Biermann and William H. Herrnstein, Jr.

522. The Drag of Airplane Wheels, Wheel Fairings, and Landing Gears—III. By William H. Herrnstein, Jr., and David Biermann.

AERODYNAMIC INTERFERENCE

REPORTS

199. Interference Tests on a N. A. C. A. Pitot Tube. By Elliott G. Reid.

338. The Effect of Reduction Gearing on Propeller-Body Interference as Shown by Full Scale Wind Tunnel Tests. By Fred E. Weick.

468. The Interference between Struts in Various Combinations. By David Biermann and William H. Herrnstein, Jr.

482. Wing-Fuselage Interference, Tail Buffeting, and Air Flow about the Tail of a Low-Wing Monoplane. By James A. White and Manley J. Hood.

No. Title

540. Interference of Wing and Fuselage from Tests of 209 Combinations in the N. A. C. A. Variable-Density Tunnel. By Eastman N. Jacobs and Kenneth E. Ward.

575. Interference of Wing and Fuselage from Tests of 28 Combinations in the N. A. C. A. Variable-Density Tunnel. By Albert Sherman.

678. Interference of Tail Surfaces and Wing and Fuselage from Tests of 17 Combinations in the N. A. C. A. Variable-Density Tunnel. By Albert Sherman.

PROPELLERS

REPORTS

14. Experimental Research on Air Propellers. By William F Durand.
    - Part I. The Aerodynamic Laboratory at Leland Stanford Junior University and the Equipment Installed with Special Reference to Tests on Air Propellers.
    - Part II. Tests on 48 Model Forms of Air Propellers, with Analysis and Discussion of Results and Presentation of the Same in Graphic Form.
    - Part III. A Brief Discussion of the Law of Similitude as Affecting the Relation between the Results Derived from Model Forms and Those to be Anticipated from Full-Sized Forms.

19. Periodic Stresses in Gyroscopic Bodies, with Applications to Air Screws. By A. F. Zahm.
    - Part I.—The Gyroscopic Particle.
    - Part II.—The Gyroscopic Three-Dimensional Body.

29. The General Theory of Blade Screws. By George de Bothezat.

30. Experimental Research on Air Propellers, II. By William F. Durand and E. P. Lesley.

64. Experimental Research on Air Propellers, III. By W. F. Durand and E. P. Lesley.

71. Slip-Stream Corrections in Performance Computation. By Edward P. Warner.

98. Design of Wind Tunnels and Wind Tunnel Propellers, II. By F. H. Norton and Edward P. Warner.

109. Experimental Research on Air Propellers, IV. W. F. Durand and E. P. Lesley.

113. Tests on Air Propellers in Yaw. By W. F. Durand and E. P. Lesley.

122. Preliminary Experiments to Determine Scale and Slip-Stream Effects on a 1/24th-Size Model of a JN4H Biplane. By D. L. Bacon.

141. Experimental Research on Air Propellers, V. By W. F. Durand and E. P. Lesley.

168. The General Efficiency Curve for Air Propellers. By Walter S. Diehl.

175. Analysis of W. F. Durand's and E. P. Lesley's Propeller Tests. By Max M. Munk.

177. The Effect of Slipstream Obstructions on Air Propellers. By E. P. Lesley and B. M. Woods.

178. Relative Efficiency of Direct and Geared Drive Propellers. By Walter S. Diehl.

183. The Analysis of Free Flight Propeller Tests and Its Application to Design. By Max M. Munk.

186. The Application of Propeller Test Data to Design and Performance Calculations. By Walter S. Diehl.

194. Investigation of Slipstream Velocity. By J. W. Crowley, Jr.

No. Title

196. Comparison of Model Propeller Tests with Airfoil Theory. By William F. Durand and E. P. Lesley.
220. Comparison of Tests on Air Propellers in Flight with Wind Tunnel Model Tests on Similar Forms. By W. F. Durand and E. P. Lesley.
235. Interaction Between Air Propellers and Airplane Structures. By W. F. Durand.
237. Tests on Thirteen Navy Type Model Propellers. By W. F. Durand.
252. The Direct Measurement of Engine Power on an Airplane in Flight with a Hub Type Dynamometer. By W. D. Gove and M. W. Green.
259. Characteristics of Propeller Sections Tested in the Variable Density Wind Tunnel. By Eastman N. Jacobs.
292. Characteristics of Five Propellers in Flight. By J. W. Crowley, Jr., and R. E. Mixson.
300. The Twenty-Foot Propeller Research Tunnel of the National Advisory Committee for Aeronautics. By Fred E. Weick and Donald H. Wood.
301. Full Scale Tests of Wood Propellers on a VE–7 Airplane in the Propeller Research Tunnel. By Fred E. Weick.
302. Full Scale Tests on a Thin Metal Propeller at Various Tip Speeds. By Fred E. Weick.
306. Full-Scale Wind-Tunnel Tests of a Series of Metal Propellers on a VE–7 Airplane. By Fred E. Weick.
326. Tests of Five Metal Model Propellers with Various Pitch Distributions in a Free Wind Stream and in Combination with a Model VE–7 Fuselage. By E. P. Lesley and Elliott G. Reid.
338. The Effect of Reduction Gearing on Propeller-Body Interference as Shown by Full Scale Wind Tunnel Tests. By Fred E. Weick.
339. Full Scale Wind Tunnel Tests with a Series of Propellers of Different Diameters on a Single Fuselage. By Fred E. Weick.
340. Full Scale Wind Tunnel Tests on Several Metal Propellers Having Different Blade Forms. By Fred E. Weick.
350. Working Charts for the Selection of Aluminum Alloy Propellers of a Standard Form to Operate with Various Aircraft Engines and Bodies. By Fred E. Weick.
351. Full Scale Wind Tunnel Tests of a Propeller with the Diameter Changed by Cutting off the Blade Tips. By Donald H. Wood.
375. Full-Scale Tests of Metal Propellers at High Tip Speeds. By Donald H. Wood.
378. Comparison of Full-Scale Propellers Having R. A. F.–6 and Clark Y Airfoil Sections. By Hugh B. Freeman.
389. The Effect of Small Angles of Yaw and Pitch on the Characteristics of Airplane Propellers. By Hugh B. Freeman.
415. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. Part I. Thick Wing—N. A. C. A. Cowled Nacelle—Tractor Propeller. By Donald H. Wood.
421. Measurement of the Differential and Total Thrust and Torque of Six Full-Scale Adjustable-Pitch Propellers. By George W. Stickle.
436. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. II.—Thick Wing—Various Radial-Engine Cowlings—Tractor Propeller. By Donald H. Wood.
447. Static Thrust of Airplane Propellers. By Walter S. Diehl.

No. Title

462. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. III.—Clark Y Wing—Various Radial-Engine Cowlings—Tractor Propeller. By Donald H. Wood.
463. The N. A. C. A. High-Speed Wind Tunnel and Tests of Six Propeller Sections. By John Stack.
464. Negative Thrust and Torque Characteristics of an Adjustable-Pitch Metal Propeller. By Edwin P. Hartman.
481. Working Charts for the Determination of Propeller Thrust at Various Air Speeds. By Edwin P. Hartman.
505. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. IV.—Thick Wing—Various Radial-Engine Cowlings—Tandem Propellers. By James G. McHugh.
506. Tests of Nacelle-Propeller Combinations in Various Positions with Reference to Wings. V.—Clark Y Biplane Cellule—N. A. C. A. Cowled Nacelle—Tractor Propeller. By Floyd Valentine.
507. Tests of Nacelle Propeller Combinations in Various Positions with Reference to Wings. VI.—Wings and Nacelles with Pusher Propellers. By Donald H. Wood and Carlton Bioletti.
564. Tests of a Wing-Nacelle-Propeller Combination at Several Pitch Settings up to 42°. By Ray Windler.
569. Wing-Nacelle-Propeller Interference for Wings of Various Spans. Force and Pressure-Distribution Tests. By Russell G. Robinson and William H. Herrnstein, Jr.
594. Characteristics of Six Propellers including the High-Speed Range. By Theodore Theodorsen, George W. Stickle, and M. J. Brevoort.
597. Air Propellers in Yaw. By E. P. Lesley, George F. Worley, and Stanley Moy.
599. Flight Tests of the Drag and Torque of the Propeller in Terminal-Velocity Dives. By Richard V. Rhode and Henry A. Pearson.
639. The Effect of Compressibility on Eight Full-Scale Propellers Operating in the Take-Off and Climbing Range. By David Biermann and Edwin P. Hartman.
640. The Aerodynamic Characteristics of Full-Scale Propellers Having 2, 3, and 4 Blades of Clark Y and R. A. F. 6 Airfoil Sections. By Edwin P. Hartman and David Biermann.
641. The Negative Thrust and Torque of Several Full-Scale Propellers and Their Application to Various Flight Problems. By Edwin P. Hartman and David Biermann.
642. Tests of Five Full-Scale Propellers in the Presence of a Radial and a Liquid-Cooled Engine Nacelle, including Tests of Two Spinners. By David Biermann and Edwin P. Hartman.
643. The Aerodynamic Characteristics of Four Full-Scale Propellers Having Different Plan Forms. By Edwin P. Hartman and David Biermann.
644. The Torsional and Bending Deflection of Full-Scale Aluminum-Alloy Propeller Blades under Normal Operating Conditions. By Edwin P. Hartman and David Biermann.
650. The Aerodynamic Characteristics of Six Full-Scale Propellers Having Different Airfoil Sections. By David Biermann and Edwin P. Hartman.
658. Tests of Two-Full Scale Propellers with Different Pitch Distributions, at Blade Angles up to 60°. By David Biermann and Edwin P. Hartman.

LIFTING ROTORS

REPORTS

No. Title

475. Wing Pressure Distribution and Rotor-Blade Motion of an Autogiro as Determined in Flight. By John B. Wheatley.

487. An Aerodynamic Analysis of the Autogiro Rotor with a Comparison between Calculated and Experimental Results. By John B. Wheatley.

515. Full-Scale Wind-Tunnel Tests of a PCA–2 Autogiro Rotor. By John B. Wheatley and Manley J. Hood.

536. Wind-Tunnel Tests of a 10-Foot-Diameter Gyroplane Rotor. By John B. Wheatley and Carlton Bioletti.

No. Title

552. Wind-Tunnel Tests of 10-Foot-Diameter Autogiro Rotors. By John B. Wheatley and Carlton Bioletti.

591. An Analytical and Experimental Study of the Effect of Periodic Blade Twist on the Thrust, Torque, and Flapping Motion of an Autogiro Rotor. By John B. Wheatley.

600. An Analysis of the Factors that Determine the Periodic Twist of an Autogiro Rotor Blade, with a Comparison of Predicted and Measured Results. By John B. Wheatley.

623. A Study of the Torque Equilibrium of an Autogiro Rotor. By F. J. Bailey, Jr.

III. AIRPLANES

AIRPLANES—PERFORMANCE AND GENERAL STABILITY

REPORTS

No. Title

17. An Investigation of the Elements Which Contribute to Statical and Dynamical Stability, and of the Effects of Variations in Those Elements. By Alexander Klemin, Edward P. Warner, and George M. Denkinger.
69. A Study of Airplane Ranges and Useful Loads. By J. G. Coffin.
70. Preliminary Report on Free Flight Tests. By Edward P. Warner and F. H. Norton.
71. Slip Stream Corrections in Performance Computation. By Edward P. Warner.
95. Diagrams of Airplane Stability. By H. Bateman.
97. General Theory of the Steady Motion of an Airplane. By George de Bothezat.
101. The Calculated Performance of Airplanes Equipped with Supercharging Engines. By E. C. Kemble.
105. Angles of Attack and Airspeeds during Maneuvers. By Edward P. Warner and F. H. Norton.
112. Control in Circling Flight. By F. H. Norton and E. T. Allen.
120. Practical Stability and Controllability of Airplanes. By F. H. Norton.
122. Preliminary Experiments to Determine Scale and Slip Stream Effects on a 1/24th Size Model of a JN4H Biplane. By D. L. Bacon.
136. Damping Coefficients Due to Tail Surfaces in Aircraft. By Lynn Chu.
153. Controllability and Maneuverability of Airplanes. By F. H. Norton and W. G. Brown.
154. A Study of Taking Off and Landing an Airplane. By T. Carroll.
155. A Study of Airplane Maneuvers with Special Reference to Angular Velocities. By H. J. E. Reid.
171. Engine Performance and the Determination of Absolute Ceiling. By Walter S. Diehl.
172. Dynamic Stability as Affected by the Longitudinal Moment of Inertia. By Edwin B. Wilson.
173. Reliable Formulae for Estimating Airplane Performance and the Effects of Changes in Weight, Wing Area, or Power. By Walter S. Diehl.
174. The Small Angular Oscillations of Airplanes in Steady Flight. By F. H. Norton.
192. Charts for Graphical Estimation of Airplane Performance. By Walter S. Diehl.
209. Characteristics of a Single Float Seaplane during Take-Off. By J. W. Crowley, Jr., and K. M. Ronan.
216. The Reduction of Airplane Flight Test Data to Standard Atmosphere Conditions. By Walter S. Diehl and E. P. Lesley.
219. Some Aspects of the Comparison of Model and Full-Scale Tests. By D. W. Taylor.
225. The Air Forces on a Model of the Sperry Messenger Airplane Without Propeller. By Max M. Munk and Walter S. Diehl.

No. Title

226. Characteristics of a Boat Type Seaplane during Take-Off. By J. W. Crowley, Jr., and K. M. Ronan.
228. A Study of the Effect of a Diving Start on Airplane Speed. By Walter S. Diehl.
234. Three Methods of Calculating Range and Endurance of Airplanes. By Walter S. Diehl.
238. The Effect of Flight Path Inclination on Airplane Velocity. By Walter S. Diehl.
242. Characteristics of a Twin-Float Seaplane during Take-Off. By J. W. Crowley, Jr.,and K. M. Ronan.
249. A Comparison of the Take-Off and Landing Characteristics of a Number of Service Airplanes. By Thomas Carroll.
265. A Full-Scale Investigation of Ground Effect. By Elliott G. Reid.
269. Air Force Tests of Sperry Messenger Model with Six Sets of Wings. By James M. Shoemaker.
279. Tests on Models of Three British Airplanes in the Variable Density Wind Tunnel. By George J. Higgins, W. S. Diehl, and George L. DeFoe.
297. The Reduction of Observed Airplane Performance to Standard Conditions. By Walter S. Diehl.
298. Effect of Variation of Chord and Span of Ailerons on Rolling and Yawning Moments in Level Flight. By R. H. Heald and D. H. Strother.
304. An Investigation of the Aerodynamic Characteristics of an Airplane Equipped with Several Different Sets of Wings. By J. W. Crowley, Jr., and M. W. Green.
343. Effect of Variation of Chord and Span of Ailerons on Rolling and Yawing Moments at Several Angles of Pitch. By R. H. Heald, D. H. Strother, and B. H. Monish.
368. A New Chart for Estimating the Absolute Ceiling of an Airplane. By Walter S. Diehl.
369. Maneuverability Investigation of the F6C—3 Airplane with Special Flight Instruments. By C. H. Dearborn and H. W. Kirschbaum.
386. Maneuverability Investigation of an F6C–4 Fighting Airplane. By C. H. Dearborn and H. W. Kirschbaum.
403. Ice Prevention on Aircraft by Means of Engine Exhaust Heat and a Technical Study of Heat Transmission from a Clark Y Airfoil. By Theodore Theodorsen and William C. Clay.
408. General Formulas and Charts for the Calculation of Airplane Performance. By W. Bailey Oswald.
414. The Effect on Airplane Performance of the Factors that Must be Considered in Applying Low-Drag Cowling to Radial Engines. By William H. McAvoy, Oscar W. Schey, and Alfred W. Young.
418. Preliminary Investigation of Modifications to Conventional Airplanes to Give Nonstalling and Short-Landing Characteristics. By Fred E. Weick.
437. The Effect of Area and Aspect Ratio on the Yawing Moments of Rudders at Large Angles of Pitch on Three Fuselages. By Hugh L. Dryden and B. H. Monish.
450. The Calculation of Take-Off Run. By Walter S. Diehl.
453. The Estimation of Maximum Load Capacity of Seaplanes and Flying Boats. By Walter S. Diehl.
458. Relative Loading on Biplane Wings. By Walter S. Diehl.

No. Title

467. The Experimental Determination of the Moments of Inertia of Airplanes. By Hartley A. Soulé and Marvel P. Miller.
498. Improved Airplane Windshields to Provide Vision in Stormy Weather. By William C. Clay.
503. The Effect of Spray Strips on the Take-Off Performance of a Model of a Flying-Boat Hull. By Starr Truscott.
514. The Measurement of the Field of View from Airplane Cockpits. By Melvin N. Gough.
528. Reduction of Hinge Moments of Airplane Control Surfaces by Tabs. By Thomas A. Harris.
560. A Simplified Application of the Method of Operators to the Calculation of Disturbed Motions of an Airplane. By Robert T. Jones.
570. The Effect of Lateral Controls in Producing Motion of an Airplane as Computed from Wind-Tunnel Data. By Fred E. Weick and Robert T. Jones.
579. A Study of the Two-Control Operation of an Airplane. By Robert T. Jones.
583. The Rolling Friction of Several Airplane Wheels and Tires and the Effect of Rolling Friction on Take-Off. By J. W. Wetmore.
618. Comparative Flight and Full-Scale Wind-Tunnel Measurements of the Maximum Lift of an Airplane. By Abe Silverstein, S. Katzoff, and James A. Hootman.
626. The Transition Phase in the Take-Off of an Airplane. By J. W. Wetmore.
635. Theoretical Stability and Control Characteristics of Wings with Various Amounts of Taper and Twist. By Henry A. Pearson and Robert T. Jones.
654. General Airplane Performance. By W. C. Rockefeller.

AIRPLANES—DIRECTIONAL STABILITY AND CONTROL

REPORTS

26. The Variation of Yawing Moment Due to Rolling. By Edwin Bidwell Wilson.
112. Control in Circling Flight. By F. H. Norton and E. T. Allen.
136. Damping Coefficients Due to Tail Surfaces in Aircraft. By Lynn Chu.
298. Effect of Variation of Chord and Span of Ailerons on Rolling and Yawing Moments in Level Flight. By R. H. Heald and D. H. Strother.
343. Effect of Variation of Chord and Span of Ailerons on Rolling and Yawing Moments at Several Angles of Pitch. By R. H. Heald, D. H. Strother, and B. H. Monish.
437. The Effect of Area and Aspect Ratio on the Yawing Moments of Rudders at Large Angles of Pitch on Three Fuselages. By Hugh L. Dryden and B. H. Monish.
570. The Effect of Lateral Controls in Producing Motion of an Airplane as Computed from Wind-Tunnel Data. By Fred E. Weick and Robert T. Jones.
579. A Study of the Two-Control Operation of an Airplane. By Robert T. Jones.

AIRPLANES—LATERAL STABILITY AND CONTROL

REPORTS

17. An Investigation of the Elements which Contribute to Statical and Dynamical Stability, and of the Effects of Variations in those Elements. By Alexander Klemin, Edward P. Warner, and George M. Denkinger.

No. Title

95. Diagrams of Airplane Stability. By H. Bateman.
167. The Measurement of the Damping in Roll on a JN4h in Flight. By F. H. Norton.
169. The Effect of Airfoil Thickness and Plan Form on Lateral Control. By H. I. Hoot.
197. A New Relation Between the Induced Yawing Moments and the Rolling Moments of an Airfoil in Straight Motion. By Max M. Munk.
260. The Effect of a Flap and Ailerons on the N. A. C. A. M-6 Airfoil Section. By George J. Higgins and Eastman N. Jacobs.
298. Effect of Variation of Chord and Span of Ailerons on Rolling and Yawing Moments in Level Flight. By R. H. Heald and D. H. Strother.
343. Effect on Variation of Chord and Span of Ailerons on Rolling and Yawing Moments at Several Angles of Pitch. By R. H. Heald, D. H. Strother, and B. H. Monish.
370. Effect of Variation of Chord and Span of Ailerons on Hinge Moments at Several Angles of Pitch. By B. H. Monish.
393. Span-Load Distribution as a Factor in Stability in Roll. By Montgomery Knight and Richard W. Noyes.
419. Wind-Tunnel Research Comparing Lateral Control Devices, Particularly at High Angles of Attack. I—Ordinary Ailerons on Rectangular Wings. By Fred E. Weick and Carl J. Wenzinger.
422. Wind-Tunnel Research Comparing Lateral Control Devices, Particularly at High Angles of Attack. II—Slotted Ailerons and Frise Ailerons. By Fred E. Weick and Richard W. Noyes.
423. Wind-Tunnel Research Comparing Lateral Control Devices, Particularly at High Angles of Attack. III—Ordinary Ailerons Rigged up 10° when Neutral. By Fred E. Weick and Carl J. Wenzinger.
424. Wind-Tunnel Research Comparing Lateral Control Devices, Particularly at High Angles of Attack. IV—Floating-Tip Ailerons on Rectangular Wings. By Fred E. Weick and Thomas A. Harris.
439. Wind-Tunnel Research Comparing Lateral Control Devices, Particularly at High Angles of Attack. V—Spoilers and Ailerons on Rectangular Wings. By Fred E. Weick and Joseph A. Shortal.
444. Wind-Tunnel Research Comparing Lateral Control Devices, Particularly at High Angles of Attack. VI—Skewed Ailerons on Rectangular Wings. By Fred E. Weick and Thomas A. Harris.
494. A Flight Investigation of the Lateral Control Characteristics of Short Wide Ailerons and Various Spoilers with Different Amounts of Wing Dihedral. By Fred E. Weick, Hartley A. Soule, and Melvin N. Gough.
499. Wind-Tunnel Research Comparing Lateral Control Devices, Particularly at High Angles of Attack. XII—Upper Surface Ailerons on Wings with Split Flaps. By Fred E. Weick and Carl J. Wenzinger.
510. Wind-Tunnel Research Comparing Lateral Control Devices, Particularly at High Angles of Attack. XIII—Auxiliary Airfoils Used as External Ailerons. By Fred E. Weick and R. W. Noyes.
517. Flight Investigation of Lateral Control Devices for Use with Full-Span Flaps. By H. A Soulé and W. H. McAvoy.
541. Aerodynamic Characteristics of Wings with Cambered External-Airfoil Flaps, including Lateral Control with a Full-Span Flap. By Robert C. Platt.
548. Effect of Tip Shape and Dihedral on Lateral-Stability Characteristics. By Joseph A. Shortal.

No. Title

549. Wind-Tunnel Investigation of the Aerodynamic Balancing of Upper-Surface Ailerons and Split Flaps. By Carl J. Wenzinger.

570. The Effect of Lateral Controls in Producing Motion of an Airplane as Computed from Wind-Tunnel Data. By Fred E. Weick and Robert T. Jones.

589. An Analysis of Lateral Stability in Power-Off Flight with Charts for Use in Design. By Charles H. Zimmerman.

602. Wind-Tunnel and Flight Tests of Slot-Lip Ailerons. By Joseph A. Shortal.

603. Wind-Tunnel Investigation of Wings with Ordinary Ailerons and Full-Span External-Airfoil Flaps. By Robert C. Platt and Joseph A. Shortal.

605. Résumé and Analysis of N. A. C. A. Lateral Control Research. By Fred E. Weick and Robert T. Jones.

611. Wind-Tunnel Investigation of Tapered Wings with Ordinary Ailerons and Partial-Span Split Flaps. By Carl J. Wenzinger.

630. A Flight Comparison of Conventional Ailerons on a Rectangular Wing and of Conventional and Floating Wing-Tip Ailerons on a Tapered Wing. By H. A. Soulé and W. Gracey.

638. The Influence of Lateral Stability on Disturbed Motions of an Airplane With Special References to the Motions Produced by Gusts. By Robert T. Jones.

AIRPLANES—LONGITUDINAL STABILITY AND CONTROL

REPORTS

1. Report on Behavior of Aeroplanes in Gusts. By the Massachusetts Institute of Technology.
   Part I. Experimental Analysis of Inherent Longitudinal Stability for a Typical Biplane. By J. C. Hunsaker.
   Part II. Theory of an Aeroplane Encountering Gusts. By E. B. Wilson.

17. An Investigation of the Elements which Contribute to Statical and Dynamical Stability, and of the Effects of Variations in those Elements. By Alexander Klemin, Edward P. Warner, and George M. Denkinger.

95. Diagrams of Airplane Stability. By H. Bateman.

96. Statical Longitudinal Stability of Airplanes. By Edward P. Warner.

162. Complete Study of the Longitudinal Oscillation of a VE–7 Airplane. By F. H. Norton and W. G. Brown.

170. A Study of Longitudinal Dynamic Stability in Flight. By F. H. Norton.

No. Title

172. Dynamic Stability as Affected by the Longitudinal Moment of Inertia. By Edwin B. Wilson.

442. A Comparison between the Theoretical and Measured Longitudinal Stability Characteristics of an Airplane. By Hartley A. Soulé and John B. Wheatley.

521. An Analysis of Longitudinal Stability in Power-Off Flight with Charts for Use in Design. By Charles H. Zimmerman.

578. Flight Measurements of the Dynamic Longitudinal Stability of Several Airplanes and a Correlation of the Measurements with Pilots' Observations of Handling Characteristics. By Hartley A. Soulé.

AIRPLANES—SPINNING

REPORTS

273. Wind Tunnel Tests on Autorotation and the "Flat Spin." By Montgomery Knight.

377. A Method of Flight Measurement of Spins. By Hartley A. Soulé and Nathan F. Scudder.

441. A Flight Investigation of the Spinning of the NY–1 Airplane with Varied Mass Distribution and other Modifications, and an Analysis Based on Wind-Tunnel Tests. By Nathan F. Scudder.

456. The Aerodynamic Forces and Moments Exerted on a Spinning Model of the NY–1 Airplane as Measured by the Spinning Balance. By M. J. Bamber and C. H. Zimmerman.

484. A Flight Investigation of the Effect of Mass Distribution and Control Setting on the Spinning of the XN2Y–1 Airplane. By N. F. Scudder.

519. Spinning Characteristics of Wings. I—Rectangular Clark Y Monoplane Wing. By M. J. Bamber and C. H. Zimmerman.

529. A Flight Investigation of the Spinning of the F4B–2 Biplane with Various Loads and Tail Surfaces. By N. F. Scudder and Oscar Seidman.

557. Preliminary Tests in the N. A. C. A. Free-Spinning Wind Tunnel. By C. H. Zimmerman.

559. The Forces and Moments Acting on Parts of the XN2Y–1 Airplane During Spins. By N. F. Scudder.

607. Spinning Characteristics of the XN2Y–1 Airplane Obtained from the Spinning Balance and Compared with Results from the Spinning Tunnel and from Flight Tests. By M. J. Bamber and R. O. House.

672. Free-Spinning Wind-Tunnel Tests of a Low-Wing Monoplane with Systematic Changes in Wings and Tails. IV. Effect of Center-Of-Gravity Location. By Oscar Seidman and A. I. Neihouse.

IV. SEAPLANES

REPORTS

No. Title

209. Characteristics of a Single Float Seaplane During Take-Off. By J. W. Crowley, Jr., and K. M. Ronan.
226. Characteristics of a Boat Type Seaplane During Take-Off. By J. W. Crowley, Jr., and K. M. Ronan.
242. Characteristics of a Twin-Float Seaplane During Take-Off. By John W. Crowley, Jr., and K. M. Ronan.
290. Water-Pressure Distribution on a Seaplane Float. By F. L. Thompson.
328. Water Pressure Distribution on a Twin-Float Seaplane. By F. L. Thompson.
346. Water Pressure Distribution on a Flying Boat Hull. By F. L. Thompson.
453. The Estimation of Maximum Load Capacity of Seaplanes and Flying Boats. By Walter S. Diehl.
470. The N. A. C. A. Tank—A High-Speed Towing Basin for Testing Models of Seaplane Floats. By Starr Truscott.
503. The Effect of Spray Strips on the Take-Off Performance of a Model of a Flying-Boat Hull. By Starr Truscott.
543. Tank Tests of N. A. C. A. Model 40 Series of Hulls for Small Flying Boats and Amphibians. By John B. Parkinson and John R. Dawson.
625. A Discussion of Certain Problems Connected with the Design of Hulls of Flying Boats and the Use of General Test Data. By Walter S. Diehl.

V. AIRSHIPS

REPORTS

No. Title

115. Bending Moments, Envelope and Cable Stresses in Non-Rigid Airships. By C. P. Burgess.
117. The Drag of Zeppelin Airships. By Max M. Munk.
138. The Drag of C Class Airship Hull with Varying Lengths of Cylindric Midships. By A. F. Zahm, R. H. Smith, and G. C. Hill.
160. An Airship Slide Rule. By E. R. Weaver and S. F. Pickering.
164. The Inertia Coefficients of an Airship in a Frictionless Fluid. By H. Bateman.
184. The Aerodynamic Forces on Airship Hulls. By Max M. Munk.
204. Forces on Airships in Gusts. By C. P. Burgess.
208. Determination of Turning Characteristics of an Airship by Means of a Camera Obscura. By J. W. Crowley, Jr., and R. G. Freeman.
210. Inertia Factors of Ellipsoids for Use in Airship Design. By L. B. Tuckerman.
211. Water Model Tests for Semirigid Airships. By L. B. Tuckerman.
212. Stability Equations for Airship Hulls. By A. F. Zahm.
215. Air Forces, Moments, and Damping on Model of Fleet Airship Shenandoah. By A. F. Zahm, R. H. Smith, and F. A. Louden.
223. Pressure Distribution on the C–7 Airship. By J. W. Crowley, Jr., and S. J. DeFrance.
291. Drag of C Class Airship Hulls of Various Fineness Ratios. By A. F. Zahm, R. H. Smith, and F. A. Louden.
318. Speed and Deceleration Trials of U. S. S. *Los Angeles*. By S. J. DeFrance and C. P. Burgess.
324. Flight Tests on U. S. S. *Los Angeles*. Part I—Full Scale Pressure Distribution Investigation. By S. J. DeFrance.
325. Flight Tests on U. S. S. *Los Angeles*. Part II—Stress and Strength Determination. By C. P. Burgess.
333. Full-Scale Turning Characteristics of the U. S. S. *Los Angeles*. By F. L. Thompson.
394. Airship Model Tests in the Variable Density Wind Tunnel. By Ira H. Abbott.
397. The Drag Characteristics of Several Airships Determined by Deceleration Tests. By F. L. Thompson and H. W. Kirschbaum.
405. Application of Practical Hydrodynamics to Airship Design. By Ralph H. Upson and W. A. Klikoff.
430. Measurements of Flow in the Boundary Layer of a 1/40-Scale Model of the U. S. Airship *Akron*. By Hugh B. Freeman.
432. Force Measurements on a 1/40-Scale Model of the U. S. Airship *Akron*. By Hugh B. Freeman.
443. Pressure-Distribution Measurements on the Hull and Fins of a 1/40-Scale Model of the U. S. Airship *Akron*. By Hugh B. Freeman.
566. Ground-Handling Forces on a 1/40-Scale Model of the U. S. Airship *Akron*. By Abe Silverstein and B. G. Gulick.
604. Pressure-Distribution Measurements at Large Angles of Pitch on Fins of Different Span-Chord Ratio on a 1/40-Scale Model of the U. S. Airship *Akron*. By James G. McHugh.

VI. ROTATING WING AIRCRAFT

REPORTS

No. Title

80. Stability of the Parachute and Helicopter. By H. Bateman.
434. Lift and Drag Characteristics and Gliding Performance of an Autogiro as Determined in Flight. By John B. Wheatley.
475. Wing Pressure Distribution and Rotor-Blade Motion of an Autogiro as Determined in Flight. By John B. Wheatley.
523. The Influence of Wing Setting on the Wing Load and Rotor Speed of a PCA–2 Autogiro as Determined in Flight. By John B. Wheatley.
623. A Study of the Torque Equilibrium of an Autogiro Rotor. By F. J. Bailey, Jr.

VII. AIRCRAFT POWER PLANTS AND ACCESSORIES

FUELS

REPORTS

No. Title

42. A New Process for the Production of Aircraft-Engine Fuels. By Auguste Jean Paris, Jr., and W. Francklyn Paris.
47. Power Characteristics of Fuels for Aircraft Engines.
    Part I.—Power Characteristics of Aviation Gasoline. By H. C. Dickinson, W. S. James, E. W. Roberts, V. R. Gage, and D. R. Harper, 3d.
    Part II.—Power Characteristics of Sumatra and Borneo Gasolines. By E. W. Roberts.
    Part III.—Power Characteristics of 20 Per Cent Benzol Mixture. By E. W. Roberts.
89. Comparison of Alcogas Aviation Fuel with Export Aviation Gasoline. By V. R. Gage, S. W. Sparrow, and D. R. Harper, 3d.
90. Comparison of Hecter Fuel with Export Aviation Gasoline. By H. C. Dickinson, V. R. Gage, and S. W. Sparrow.
232. Fuels for High Compression Engines. By Stanwood W. Sparrow.
321. Fuel Vapor Pressures and the Relation of Vapor Pressure to the Preparation of Fuel for Combustion in Fuel Injection Engines. By W. F. Joachim and A. M. Rothrock.
433. Rates of Fuel Discharge as Affected by the Design of Fuel-Injection Systems for Internal-Combustion Engines. By A. G. Gelalles and E. T. Marsh.
471. Performance of a Fuel-Injection Spark-Ignition Engine Using a Hydrogenated Safety Fuel. By Oscar W. Schey and Alfred W. Young.
477. Effect of Vicsosity on Fuel Leakage between Lapped Plungers and Sleeves and on the Discharge from a Pump-Injection System. By A. M. Rothrock and E. T. Marsh.
535. Hydrogen as an Auxiliary Fuel in Compression-Ignition Engines. By Harold C. Gerrish and Hampton H. Foster.
655. The Knocking Characteristics of Fuels in Relation to Maximum Permissible Performance of Aircraft Engines. By A. M. Rothrock and Arnold E. Biermann.

FUEL INJECTION

REPORTS

222. Spray Penetration with a Simple Fuel Injection Nozzle. By Harold E. Miller and Edward G. Beardsley.
224. An Investigation of the Coefficient of Discharge of Liquids through Small Round Orifices. By W. F. Joachim.
243. A Preliminary Study of Fuel Injection and Compression Ignition as Applied to an Aircraft Engine Cylinder. By Arthur W. Gardiner.
258. Some Factors Affecting the Reproducibility of Penetration and the Cut-Off of Oil Sprays for Fuel Injection Engines. By E. G. Beardsley.
268. Factors in the Design of Centrifugal Type Injection Valves for Oil Engines. By W. F. Joachim and E. G. Beardsley.
274. The N. A. C. A. Photographic Apparatus for Studying Fuel Sprays from Oil Engine Injection Valves and Test Results from Several Researches. By Edward G. Beardsley.

No. Title

281. The Effects of Fuel and Cylinder Gas Densities on the Characteristics of Fuel Sprays for Oil Engines. By W. F. Joachim and Edward G. Beardsley.
330. Experimental and Analytical Determination of the Motion of Hydraulically Operated Valve Stems in Oil Engine Injection Systems. By A. G. Gelalles and A. M. Rothrock.
341. The Design and Development of an Automatic Injection Valve with an Annular Orifice of Varying Area. By William F. Joachim, Chester W. Hicks, and Hampton H. Foster.
363. Pressure Fluctuations in a Common-Rail Fuel Injection System. By A. M. Rothrock.
373. Coefficients of Discharge of Fuel Injection Nozzles for Compression-Ignition Engines. By A. G. Gelalles.
396. Hydraulics of Fuel Injection Pumps for Compression-Ignition Engines. By A. M. Rothrock.
402. Effect of Orifice Length-Diameter Ratio on Fuel Sprays for Compression-Ignition Engines. By A. G. Gelalles.
425. The Effect of Nozzle Design and Operating Conditions on the Atomization and Distribution of Fuel Sprays. By Dana W. Lee.
429. The N. A. C. A. Apparatus for Studying the Formation and Combustion of Fuel Sprays and the Results from Preliminary Tests. By A. M. Rothrock.
435. Fuel Vaporization and Its Effect on Combustion in a High-Speed Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
438. Experiments on the Distribution of Fuel Sprays. By Dana W. Lee.
440. The Mechanism of Atomization Accompanying Solid Injection. By R. A. Castleman, Jr.
454. Photomicrographic Studies of Fuel Sprays. By Dana W. Lee and Robert C. Spencer.
455. Penetration and Duration of Fuel Sprays from a Pump Injection System. By A. M. Rothrock and E. T. Marsh.
471. Performance of a Fuel-Injection Spark-Ignition Engine Using a Hydrogenated Safety Fuel. By Oscar W. Schey and Alfred W. Young.
477. Effect of Viscosity on Fuel Leakage between Lapped Plungers and Sleeves and on the Discharge from a Pump-Injection System. By A. M. Rothrock and E. T. Marsh.
483. Effect of Moderate Air Flow on the Distribution of Fuel Sprays after Injection Cut-Off. By A. M. Rothrock and R. C. Spencer.
520. A Comparison of Fuel Sprays from Several Types of Injection Nozzles. By Dana W. Lee.
525. Some Effects of Injection Advance Angle, Engine-Jacket Temperature, and Speed on Combustion in a Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
533. Distribution and Regularity of Injection from a Multicylinder Fuel-Injection Pump. By A. M. Rothrock and E. T. Marsh.
544. Combustion in a Bomb with a Fuel-Injection System. By Mildred Cohn and Robert C. Spencer.
545. Effects of Air-Fuel Ratio on Fuel Spray and Flame Formation in a Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.

No. Title

561. Effect of Nozzle Design on Fuel Spray and Flame Formation in a High-Speed Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
565. Measurements of Fuel Distribution within Sprays for Fuel-Injection Engines. By Dana W. Lee.
580. Heat Transfer to Fuel Sprays Injected into Heated Gases. By Robert F. Selden and Robert C. Spencer.
588. Fuel Spray and Flame Formation in a Compression-Ignition Engine Employing Air Flow. By A. M. Rothrock and C. D. Waldron.

FUEL CARBURETION

REPORTS

11. Carburetor Design—A Preliminary Study of the State of the Art. By Charles Edward Lucke, assisted by Friederich Otto Willhofft.
48. Carbureting Conditions Characteristic of Aircraft Engines. By Percival S. Tice.
49. Metering Characteristics of Carburetors. By Percival S. Tice and H. C. Dickinson.
404. The Effect of Increased Carburetor Pressure on Engine Performance at Several Compression Ratios. By Oscar W. Schey and Vern G. Rollin.

CYLINDER CHARGING

REPORTS

24. Air Flow through Poppet Valves. By G. W. Lewis and E. M. Nutting.
189. Relation of Fuel-Air Ratio to Engine Performance. By Stanwood W. Sparrow.
277. The Comparative Performance of an Aviation Engine at Normal and High Inlet Air Temperatures. By Arthur W. Gardiner and Oscar W. Schey.
390. The Effect of Valve Timing upon the Performance of a Supercharged Engine at Altitude and an Unsupercharged Engine at Sea Level. By Oscar W. Schey and Arnold E. Biermann.
469. Increasing the Air Charge and Scavenging the Clearance Volume of a Compression-Ignition Engine. By J. A. Spanogle, C. W. Hicks, and H. H. Foster.
483. Effect of Moderate Air Flow on the Distribution of Fuel Sprays after Injection Cut-Off. By A. M. Rothrock and R. C. Spencer.
588. Fuel Spray and Flame Formation in a Compression-Ignition Engine Employing Air Flow. By A. M. Rothrock and C. D. Waldron.
653. A Study of Air Flow in an Engine Cylinder. By Dana W. Lee.
657. The Influence of Directed Air Flow on Combustion in a Spark-Ignition Engine. By A. M. Rothrock and R. C. Spencer.

SUPERCHARGING

REPORTS

23. Aeronautic Power Plant Investigations. By the Subcommittee on Power Plants.
    - Part 1. Performance of Aeronautic Engines at High Altitudes.
    - Part 2. Radiator Design.
    - Part 3. Spark Plugs.

No. Title

45. Effect of Compression Ratio, Pressure, Temperature, and Humidity on Power.
    - Part I.—Variation of Horsepower with Altitude and Compression Ratio. By H. C. Dickinson, W. S. James, and G. V. Anderson.
    - Part II.—Value of Supercharging. By H. C. Dickinson and G. V. Anderson.
    - Part III.—Variation of Horsepower with Temperature. By H. C. Dickinson, W. S. James, and G. V. Anderson.
    - Part IV.—Influence of Water Injection on Engine Performance. By V. W. Brinkerhoff.
101. The Calculated Performance of Airplanes Equipped with Supercharging Engines. By E. C. Kemble.
230. Description and Laboratory Tests of a Roots Type Aircraft Engine Supercharger. By Marsden Ware.
263. Preliminary Flight Tests of the N. A. C. A. Roots Type Aircraft Engine Supercharger. By Arthur W. Gardiner and Elliott G. Reid.
283. A Preliminary Investigation of Supercharging an Air-Cooled Engine in Flight. By Marsden Ware and Oscar W. Schey.
284. The Comparative Performance of Roots Type Aircraft Engine Superchargers as Affected by Change in Impeller Speed and Displacement. By Marsden Ware and Ernest E. Wilson.
303. An Investigation of the Use of Discharge Valves and an Intake Control for Improving the Performance of N. A. C. A. Roots Type Supercharger. By Oscar W. Schey and Ernest E. Wilson.
327. The Effect of Supercharger Capacity on Engine and Airplane Performance. By O. W. Schey and W. D. Gove.
355. Comparative Flight Performance with an N. A. C. A. Roots Supercharger and a Turbocentrifugal Supercharger. By Oscar W. Schey and Alfred W. Young.
384. The Comparative Performance of Superchargers. By Oscar W. Schey.

SPARK-IGNITION STUDIES

REPORTS

51. Spark Plug Defects and Tests.
    - Part I. Causes of Failure of Spark Plugs. By F. B. Silsbee.
    - Part II. Gas Leakage in Spark Plugs. By L. B. Loeb, L. G. Sawyer, and E. L. Fonseca.
    - Part III. Methods for Testing Spark Plugs. By H. C. Dickinson, F. B. Silsbee, and P. G. Agnew.
52. Temperatures in Spark Plugs Having Steel and Brass Shells. By C. S. Cragoe.
53. Properties and Preparation of Ceramic Insulators for Spark Plugs.
    - Part I. Methods of Measuring Resistance and Insulators at High Temperatures. By F. B. Silsbee and R. K. Honaman.
    - Part II. Electrical Resistance of Various Insulating Materials at High Temperatures. By R. K. Honaman and E. L. Fonseca.
    - Part III. Preparation and Composition of Ceramic Bodies for Spark Plug Insulators. By A. V. Bleininger.
    - Part IV. Cements for Spark-Plug Electrodes. By H. F. Staley.
54. Effect of Temperature and Pressure on the Sparking Voltage. By L. B. Loeb and F. B. Silsbee.

No. Title

56. Heat Energy of Various Ignition Sparks:
    Part I.—Method of Measuring Heat Energy of Ignition Sparks. By F. B. Silsbee, L. B. Loeb, and E. L. Fonseca.
    Part II.—Measurement of Heat Energy per Spark of Various Ignition Systems. By F. B. Silsbee and E. L. Fonseca.
57. The Subsidiary Gap as a Means for Improving Ignition. By W. S. Gorton.
58. Characteristics of High-Tension Magnetos. By F. B. Silsbee.
    Part I.—Cycle of Operation of Jump-Spark Ignition Systems.
    Part II.—Transformation Ratio and Coupling in High-Tension Magnetos.
123. Simplified Theory of the Magneto. By F. B. Silsbee.
179. The Effect of Electrode Temperature on the Sparking Voltage of Short Spark Gaps. By F. B. Silsbee.
187. Flame Speed and Spark Intensity. By D. W. Randolph and F. B. Silsbee.
202. The Sparking Voltage of Spark Plugs. By F. B. Silsbee.
241. Electrical Characteristics of Spark Generators for Automotive Ignition. By R. B. Brode, D. W. Randolph, and F. B. Silsbee.
359. An Investigation of the Effectiveness of Ignition Sparks. By Melville F. Peters, Wayne L. Summerville, and Merlin Davis.
374. The Automotive Ignition Coil. By T. H. Darnell. Note by F. B. Silsbee.
486. Infrared Radiation from Explosions in a Spark-Ignition Engine. By Charles F. Marvin, Jr., Frank R. Caldwell, and Sydney Steele.
622. A Photographic Study of Combustion and Knock in a Spark-Ignition Engine. By A. M. Rothrock and R. C. Spencer.
657. The Influence of Directed Air Flow on Combustion in a Spark-Ignition Engine. By A. M. Rothrock and R. C. Spencer.

COMPRESSION-IGNITION STUDIES

REPORTS

243. A Preliminary Study of Fuel Injection and Compression Ignition as Applied to an Aircraft Engine Cylinder. By Arthur W. Gardiner.
281. The Effects of Fuel and Cylinder Gas Densities on the Characteristics of Fuel Sprays for Oil Engines. By W. F. Joachim and Edward G. Beardsley.
282. The Performance of Several Combustion Chambers Designed for Aircraft Oil Engines. By William F. Joachim and Carlton Kemper.
373. Coefficients of Discharge of Fuel Injection Nozzles for Compression-Ignition Engines. By A. G. Gelalles.
401. Combustion in a High-Speed Compression-Ignition Engine. By A. M. Rothrock.
402. Effect of Orifice Length-Diameter Ratio on Fuel Sprays for Compression-Ignition Engines. By A. G. Gelalles.
435. Fuel Vaporization and Its Effect on Combustion in a High-Speed Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
535. Hydrogen as an Auxiliary Fuel in Compression-Ignition Engines. By Harold C. Gerrish and Hampton H. Foster.
545. Effects of Air-Fuel Ratio on Fuel Spray and Flame Formation in a Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.

No. Title

561. Effect of Nozzle Design on Fuel Spray and Flame Formation in High-Speed Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
568. The Quiescent-Chamber Type Compression-Ignition Engine. By H. H. Foster.
577. Prechamber Compression-Ignition Engine Performance. By Charles S. Moore and John H. Collins, Jr.
588. Fuel Spray and Flame Formation in a Compression-Ignition Engine Employing Air Flow. By A. M. Rothrock and C. D. Waldron.

COMBUSTION STUDIES

REPORTS

176. A Constant Pressure Bomb. By F. W. Stevens.
187. Flame Speed and Spark Intensity. By D. W. Randolph and F. B. Silsbee.
276. Combustion Time in the Engine Cylinder and its Effect on Engine Performance. By Charles F. Marvin, Jr.
280. The Gaseous Explosive Reaction—The Effect of Inert Gases. By F. W. Stevens.
282. The Performance of Several Combustion Chambers Designed for Aircraft Oil Engines. By William F. Joachim and Carlton Kemper.
305. The Gaseous Explosive Reaction—A Study of the Kinetics of Composite Fuels. By F. W. Stevens.
337. The Gaseous Explosive Reaction at Constant Pressure—The Reaction Order and Reaction Rate. By F. W. Stevens.
372. The Gaseous Explosive Reaction—The Effect of Pressure on the Rate of Propagation of the Reaction Zone and upon the Rate of Molecular Transformation. By F. W. Stevens.
399. Flame Movement and Pressure Development in an Engine Cylinder. By Charles F. Marvin, Jr., and Robert D. Best.
401. Combustion in a High-Speed Compression Ignition Engine. By A. M. Rothrock.
429. The N. A. C. A. Apparatus for Studying the Formation and Combustion of Fuel Sprays and the Results from Preliminary Tests. By A. M. Rothrock.
435. Fuel Vaporization and Its Effect on Combustion in a High-Speed Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
476. Relation of Hydrogen and Methane to Carbon Monoxide in Exhaust Gases from Internal-Combustion Engines By Harold C. Gerrish and Arthur M. Tessmann.
486. Infrared Radiation from Explosions in a Spark-Ignition Engine. By Charles F. Marvin, Jr., Frank R. Caldwell, and Sydney Steele.
493. The Physical Effects of Detonation in a Closed Cylindrical Chamber. By C. S. Draper.
512. Some Factors Affecting Combustion in an Internal-Combustion Engine. By A. M. Rothrock and Mildred Cohn.
525. Some Effects of Injection Advance Angle, Engine-Jacket Temperature, and Speed on Combustion in a Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
531. The Effect of Water Vapor on Flame Velocity in Equivalent CO–O_2 Mixtures. By Ernest F. Fiock and H. Kendall King.
532. The Soap-Bubble Method of Studying the Combustion of Mixtures of CO and O_2. By Ernest F. Fiock and Carl H. Roeder.
544. Combustion in a Bomb with a Fuel-Injection System. By Mildred Cohn and Robert C. Spencer.

No. Title

545. Effects of Air-Fuel Ratio on Fuel Spray and Flame Formation in a Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
553. Some Effects of Argon and Helium upon Explosions of Carbon Monoxide and Oxygen. By Ernest F. Fiock and Carl H. Roeder.
556. Further Studies of Flame Movement and Pressure Development in an Engine Cylinder. By Charles F. Marvin, Jr., Armistead Wharton, and Carl H. Roeder.
561. Effect of Nozzle Design on Fuel Spray and Flame Formation in a High-Speed Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
616. Interrelation of Exhaust-Gas Constituents. By Harold C. Gerrish and Fred Voss.
617. Auto-Ignition and Combustion of Diesel Fuel in a Constant-Volume Bomb. By Robert F. Selden.
622. A Photographic Study of Combustion and Knock in a Spark-Ignition Engine. By A. M. Rothrock and R. C. Spencer.
655. The Knocking Characteristics of Fuels in Relation to Maximum Permissible Performance of Aircraft Engines. By A. M. Rothrock and Arnold E. Biermann.
657. The Influence of Directed Air Flow on Combustion in a Spark-Ignition Engine. By A. M. Rothrock and R. C. Spencer.
682. Flame Speeds and Energy Considerations for Explosions in a Spherical Bomb. By Ernest F. Fiock, Charles F. Marvin, Jr., Frank R. Caldwell, and Carl H. Roeder.

ENGINE COOLING

REPORTS

158. Mathematical Equations for Heat Conduction in the Fins of Air-Cooled Engines. By D. R. Harper, 3d, and W. B. Brown.
313. Drag and Cooling with Various Forms of Cowling for a "Whirlwind" Radial Air-cooled Engine—I. By Fred E. Weick.
314. Drag and Cooling with Various Forms of Cowling for a "Whirlwind" Radial Air-Cooled Engine—II. By Fred E. Weick.
332. The Effect of Cowling on Cylinder Temperatures and Performance of a Wright J–5 Engine. By Oscar W. Schey and Arnold E. Biermann.
414. The Effect on Airplane Performance of the Factors that Must Be Considered in Applying Low-Drag Cowling to Radial Engines. By William H. McAvoy, Oscar W. Schey and Alfred W. Young.
488. Heat Transfer from Finned Metal Cylinders in an Air Stream. By Arnold E. Biermann and Benjamin Pinkel.
511. The Effect of Baffles on the Temperature Distribution and Heat-Transfer Coefficients of Finned Cylinders. By Oscar W. Schey and Vern G. Rollin.
525. Some Effects of Injection Advance Angle, Engine-Jacket Temperature, and Speed on Combustion in a Compression-Ignition Engine. By A. M. Rothrock and C. D. Waldron.
550. Cooling Characteristics of a 2-Row Radial Engine. By Oscar W. Schey and Vern G. Rollin.
555. Air Flow around Finned Cylinders. By M. J. Brevoort and Vern G. Rollin.
587. Blower Cooling of Finned Cylinders. By Oscar W. Schey and Herman H. Ellerbrock, Jr.
593. Cooling of Airplane Engines at Low Air Speeds. By Theodore Theodorsen, M. J. Brevoort, and George W. Stickle.

No. Title

612. Heat-Transfer Processes in Air-Cooled Engine Cylinders. By Benjamin Pinkel.
645. Correction of Temperatures of Air-Cooled Engine Cylinders for Variation in Engine and Cooling Conditions. By Oscar W. Schey, Benjamin Pinkel, and Herman H. Ellerbrock, Jr.
674. Cooling on the Front of an Air-Cooled Engine Cylinder in a Conventional Engine Cowling. By M. J. Brevoort and U. T. Joyner.
676. Surface Heat-Transfer Coefficients of Finned Cylinders. By Herman H. Ellerbrock, Jr., and Arnold E. Biermann.
680. The Effect of Nacelle-Propeller Diameter Ratio on Body Interference and on Propeller and Cooling Characteristics. By James G. McHugh and Eldridge H. Derring.

HEAT EXCHANGERS

REPORTS

23. Aeronautic Power Plant Investigations. By the Subcommittee on Power Plants.
    Part 1.—Performance of Aeronautic Engines at High Altitudes.
    Part 2.—Radiator Design.
    Part 3.—Spark Plugs.
43. Synopsis of Aeronautic Radiator Investigations for the Years 1917 and 1918. By H. C. Dickinson and R. V. Kleinschmidt.
59. General Analysis of Airplane Radiator Problems. By H. C. Dickinson, W. S. James, and R. V. Kleinschmidt.
60. General Discussion of Test Methods for Radiators. By H. C. Dickinson, W. S. James, and W. B. Brown.
61. Head Resistance Due to Radiators.
    Part I.—Head Resistance of Radiator Cores. By R. V. Kleinschmidt and S. R. Parsons.
    Part II.—Preliminary Report on Resistance Due to Nose Radiator. By R. V. Kleinschmidt.
    Part III.—Effect of Streamline Casing for Free-Air Radiator. By S. R. Parsons.
62. Effect of Altitude on Radiator Performance. By W. S. James and S. R. Parsons.
63. Results of Tests on Radiators for Aircraft Engines.
    Part I.—Heat Dissipation and other Properties of Radiators. By H. C. Dickinson, W. S. James, and R. V. Kleinschmidt.
    Part II.—Water Flow through Radiator Cores. By W. S. James.
86. Properties of Special Types of Radiators. By S. R. Parsons.
87. Effects of Nature of Cooling Surface on Radiator Performance. By S. R. Parsons and R. V. Kleinschmidt.
88. Pressure Drop in Radiator Air Tubes. By S. R. Parsons.
106. Turbulence in the Air Tubes of Radiators for Aircraft Engines. By S. R. Parsons.
261. Resistance and Cooling Power of Various Radiators. By R. H. Smith.

TWO-STROKE CYCLE

REPORTS

239. Power Output and Air Requirements of a Two-Stroke Cycle Engine for Aeronautical Use. By C. R. Paton and Carlton Kemper.
495. A Description and Test Results of a Spark-Ignition and a Compression-Ignition 2-Stroke-Cycle Engine. By J. A. Spanogle and E. G. Whitney.

ENGINE POWER AND ECONOMY

REPORTS

No. Title

7. Thermodynamic Efficiency of Present Types of Internal Combustion Engines for Aircraft. By Charles E. Lucke, Columbia University.
   - Part I.—Review of the Development of Engines Suitable for Aeronautic Service.
   - Part II.—Aero Engines Analyzed with Reference to Elements of Process or Function.
23. Aeronautics Power Plant Investigations. By the Subcommittee on Power Plants:
   - Part 1.—Performance of Aeronautic Engines at High Altitudes.
   - Part 2.—Radiator Design.
   - Part 3.—Spark Plugs.
45. Effect of Compression Ratio, Pressure, Temperature, and Humidity on Power.
   - Part I.—Variation of Horsepower with Altitude and Compression Ratio. By H. C. Dickinson, W. S. James, and G. V. Anderson.
   - Part II.—Value of Supercharging. By H. C. Dickinson and G. V. Anderson.
   - Part III.—Variation of Horsepower with Temperature. By H. C. Dickinson, W. S. James, and G. V. Anderson.
   - Part IV.—Influence of Water Injection on Engine Performance. By V. W. Brinkerhoff.
50. Calculation of Low-Pressure Indicator Diagrams. By
102. Performance of a Liberty 12 Airplane Engine. By S. W. Sparrow and H. S. White.
103. Performance of a 300-Horsepower Hispano-Suiza Airplane Engine. By S. W. Sparrow and H. S. White.
134. Performance of Maybach 300-Horsepower Airplane Engine. By S. W. Sparrow.
135. Performance of B. M. W. 185-Horsepower Airplane Engine. By S. W. Sparrow.
171. Engine Performance and the Determination of Absolute Ceiling. By Walter S. Diehl.
189. Relation of Fuel-Air Ratio to Engine Performance. By Stanwood W. Sparrow.
190. Correcting Horsepower Measurements to a Standard Temperature. By Stanwood W. Sparrow.
205. The Effect of Changes in Compression Ratio upon Engine Performance. By Stanwood W. Sparrow.
252. The Direct Measurement of Engine Power on an Airplane in Flight with a Hub Type Dynamometer. By W. D. Gove and M. W. Green.
272. The Relative Performance Obtained with Several Methods of Control of an Overcompressed Engine Using Gasoline. By Arthur W. Gardiner and William E. Whedon.
277. The Comparative Performance of an Aviation Engine at Normal and High Inlet Air Temperatures. By Arthur W. Gardiner and Oscar W. Schey.

No. Title

295. The Variation in Engine Power with Altitude Determined from Measurements in Flight with a Hub Dynamometer. By W. D. Gove.
332. The Effect of Cowling on Cylinder Temperatures and Performance of a Wright J–5 Engine. By Oscar W. Schey and Arnold E. Biermann.
404. The Effect of Increased Carburetor Pressure on Engine Performance at Several Compression Ratios. By Oscar W. Schey and Vern G. Rollin.
426. The Effect of Humidity on Engine Power at Altitude. By D. B. Brooks and E. A. Garlock.
471. Performance of a Fuel-Injection Spark-Ignition Engine Using a Hydrogenated Safety Fuel. By Oscar W. Schey and Alfred W. Young.
577. Prechamber Compression-Ignition Engine Performance. By Charles S. Moore and John H. Collins, Jr.
645. Correction of Temperatures of Air-Cooled Engine Cylinders for Variation in Engine and Cooling Conditions. By Oscar W. Schey, Benjamin Pinkel, and Herman H. Ellerbrock, Jr.
655. The Knocking Characteristics of Fuels in Relation to Maximum Permissible Performance of Aircraft Engines. By A. M. Rothrock and Arnold E. Biermann.

GENERAL POWER PLANTS RESEARCH

REPORTS

10. Mufflers for Aeronautic Engines. By H. Diederichs and G. B. Upton.
44. The Altitude Laboratory for the Testing of Aircraft Engines. By H. C. Dickinson and H. G. Boutell.
46. A Study of Airplane Engine Tests. By Victor R. Gage.
55. Investigation of the Muffling Problem for Airplane Engines. By G. B. Upton and V. R. Gage.
107. A High-Speed Engine Pressure Indicator of the Balanced Diaphragm Type. By H. C. Dickinson and F. B. Newell.
108. Some Factors of Airplane Engine Performance. By Victor R. Gage.
159. Jet Propulsion for Airplanes. By Edgar Buckingham.
250. Description of the N. A. C. A. Universal Test Engine and Some Test Results. By Marsden Ware.
252. The Direct Measurement of Engine Power on an Airplane in Flight with a Hub Type Dynamometer. By W. D. Gove and M. W. Green.
262. Friction of Aviation Engines. By S. W. Sparrow and M. A. Thorne.
294. The Measurement of Maximum Cylinder Pressures. By Chester W. Hicks.
409. The Elimination of Fire Hazard Due to Back Fires. By Theodore Theodorsen and Ira M. Freeman.
466. Aircraft Power Plant Instruments. By Harcourt Sontag and W. G. Brombacher.

VIII. AIRCRAFT STRUCTURES

AIR LOADS ON AIRCRAFT STRUCTURES

REPORTS

No. Title

1. Report on Behavior of Aeroplanes in Gusts. By the Massachusetts Institute of Technology.
   Part I.—Experimental Analysis of Inherent Longitudinal Stability for a Typical Biplane. By J. C. Hunsaker.
   Part II.—Theory of an Aeroplane Encountering Gusts. By E. B. Wilson.
21. Theory of an Airplane Encountering Gusts, II. By Edwin Bidwell Wilson.
27. Theory of an Airplane Encountering Gusts, III. By Edwin Bidwell Wilson.
99. Accelerations in Flight. By E. H. Norton and E. T. Allen.
104. Torsion of Wing Trusses at Diving Speeds. By Roy G. Miller.
148. The Pressure Distribution over the Horizontal Tail Surfaces of an Airplane, III. By F. H. Norton and W. G. Brown.
149. Pressure Distribution over the Rudder and Fin of an Airplane in Flight. By F. H. Norton and W. G. Brown.
150. Pressure Distribution over Thick Aerofoils—Model Tests. By F. H. Norton and D. L. Bacon.
161. The Distribution of Lift over Wing Tips and Ailerons. By David L. Bacon.
163. The Vertical, Longitudinal, and Lateral Accelerations Experienced by an S.E.-5A. Airplane while Maneuvering. By F. H. Norton and T. Carroll.
193. Pressure Distribution over the Wings of an MB-3 Airplane in Flight. By F. H. Norton.
203. Accelerations in Flight. By J. H. Doolittle.
204. Forces on Airships in Gusts. By C. P. Burgess.
229. Pressure Distribution over Thick, Tapered Airfoils, N. A. C. A. 81, U. S. A. 27 C Modified, and U. S. A. 35. By Elliott G. Reid.
254. Distribution of Pressure over Model of the Upper Wing and Aileron of a Fokker D-VII Airplane. By A. J. Fairbanks.
257. Pressure Distribution over a Wing and Tail Rib of a VE-7 and of a TS Airplane in Flight. By J. W. Crowley, Jr.
271. Pressure Distribution Tests on PW-9 Wing Models Showing Effects of Biplane Interference. By A. J. Fairbanks.
288. Pressure Distribution over a Rectangular Monoplane Wing Model up to 90° Angle of Attack. By Montgomery Knight and Oscar E. Loeser, Jr.
296. Pressure Distribution Tests on PW-9 Wing Models from −18° through 90° Angle of Attack. By Oscar E. Loeser, Jr.
307. The Pressure Distribution over the Horizontal and Vertical Tail Surfaces of the F6C-4 Pursuit Airplane in Violent Maneuvers. By R. V. Rhode.
353. Airfoil Pressure Distribution Investigation in the Variable Density Wind Tunnel. By Eastman N. Jacobs, John Stack, and Robert M. Pinkerton.
360. Pressure Distribution over a Symmetrical Airfoil Section with Trailing Edge Flap. By Eastman N. Jacobs and Robert M. Pinkerton.

No. Title

364. The Pressure Distribution over the Wings and Tail Surfaces of a PW-9 Pursuit Airplane in Flight. By Richard V. Rhode.
367. Pressure Distribution over a Thick, Tapered and Twisted Monoplane Wing Model—N. A. C. A. 81-J. By Carl J. Wenzinger.
369. Maneuverability Investigation of the F6C-3 Airplane with Special Flight Instruments. By C. H. Dearborn and H. W. Kirschbaum.
370. Effect of Variation of Chord and Span of Ailerons on Hinge Moments at Several Angles of Pitch. By B. H. Monish.
380. Pressure Distribution over the Fuselage of a PW-9 Airplane in Flight. By Richard V. Rhode and Eugene E. Lundquist.
386. Maneuverability Investigation of an F6C-4 Fighting Airplane. By C. H. Dearborn and H. W. Kirschbaum.
413. A Method for Computing Leading-Edge Loads. By Richard V. Rhode and Henry A. Pearson.
417. Pressure Distribution Tests on a Series of Clark Y Biplane Cellules with Special Reference to Stability. By Richard W. Noyes.
443. Pressure Distribution Measurements on the Hull and Fins of a 1/40th Scale Model of the U. S. Airship *Akron*. By Hugh B. Freeman.
445. Working Charts for the Determination of the Lift Distribution between Biplane Wings. By Paul Kuhn.
456. The Aerodynamic Forces and Moments Exerted on a Spinning Model of the NY-1 Airplane as Measured by the Spinning Balance. By M. J. Bamber and C. H. Zimmerman.
457. Maneuverability Investigation of an O3U-1 Observation Airplane. By F. L. Thompson and H. W. Kirschbaum.
458. Relative Loading on Biplane Wings. By Walter S. Diehl.
465. Determination of the Theoretical Pressure Distribution for Twenty Airfoils. By I. E. Garrick.
475. Wing Pressure Distribution and Rotor-Blade Motion of an Autogiro as Determined in Flight. By John B. Wheatley.
500. The Influence of Tip Shape on the Wing Load Distribution as Determined by Flight Tests. By Richard V. Rhode.
501. Relative Loading on Biplane Wings of Unequal Chords. By Walter S. Diehl.
528. Reduction of Hinge Moments of Airplane Control Surfaces by Tabs. By Thomas A. Harris.
559. The Forces and Moments Acting on Parts of the XN2Y-1 Airplane During Spins. By N. F. Scudder.
563. Calculated and Measured Pressure Distributions over the Midspan Section of the N. A. C. A. 4412 Airfoil. By Robert M. Pinkerton.
566. Ground-Handling Forces on a 1/40th Scale Model of the U. S. Airship *Akron*. By Abe Silverstein and B. G. Gulick.
571. Pressure Distribution over a Rectangular Airfoil with a Partial-Span Split Flap. By Carl J. Wenzinger and Thomas A. Harris.
574. Pressure Distribution over an Airfoil Section with a Flap and Tab. By Carl J. Wenzinger.
590. Pressure-Distribution Measurements on an O-2H Airplane in Flight. By H. A. Pearson.

No. Title

604. Pressure-Distribution Measurements at Large Angles of Pitch on Fins of Different Span-Chord Ratio on a 1/40th Scale Model of the U. S. Airship *Akron*. By James G. McHugh.
613. The Variation with Reynolds Number of Pressure Distribution over an Airfoil Section. By Robert M. Pinkerton.
614. Pressure Distribution over an N. A. C. A. 23012 Airfoil with an N. A. C. A. 23012 External-Airfoil Flap. By Carl J. Wenzinger.
620. Pressure Distribution over Airfoils with Fowler Flaps. By Carl J. Wenzinger and Walter B. Anderson.
626. The Transition Phase in the Take-Off of an Airplane. By J. W. Wetmore.
631. Airfoil Section Characteristics as Applied to the Prediction of Air Forces and Their Distribution on Wings. By Eastman N. Jacobs and R. V. Rhode.
633. Pressure Distribution over an N. A. C. A. 23012 Airfoil with a Slotted and a Plain Flap. By Carl J. Wenzinger and James B. Delano.
634. Calculation of the Chordwise Load Distribution over Airfoil Sections with Plain, Split, or Serially Hinged Trailing-Edge Flaps. By H. Julian Allen.
646. The Compressibility Burble and the Effect of Compressibility on Pressures and Forces Acting on an Airfoil. By John Stack, W. F. Lindsey, and Robert E. Littell.

GROUND LOADS ON AIRCRAFT STRUCTURES

REPORTS

366. Dynamic and Flight Tests on Rubber-Cord and Oleo-Rubber-Disk Landing Gears for an F6C–4 Airplane. By William C. Peck.
381. Static, Drop, and Flight Tests on Musselman Type Airwheels. By William C. Peck and Albert P. Beard.
406. Drop and Flight Tests on NY–2 Landing Gears, Including Measurements of Vertical Velocities at Landing. By W. C. Peck and A. P. Beard.
489. Air Conditions Close to the Ground and the Effect on Airplane Landings. By F. L. Thompson, W. C. Peck, and A. P. Beard.
686. Stability of Castering Wheels for Aircraft Landing Gears. By Arthur Kantrowitz.

WATER LOADS ON AIRCRAFT STRUCTURES

REPORTS

290. Water-Pressure Distribution on a Seaplane Float. By F. L. Thompson.
328. Water Pressure Distribution on a Twin-Float Seaplane. By F. L. Thompson.
346. Water Pressure Distribution on a Flying Boat Hull. By F. L. Thompson.

STRUCTURAL PROPERTIES OF ELEMENTS AND SPECIMENS

REPORTS

3. Report on Investigations of Aviation Wires and Cables, Their Fastenings and Terminal Connections. By John A. Roebling's Sons Co.
35. The Strength of One-Piece, Solid, Built-Up, and Laminated Wood Airplane Wing Beams. By John H. Nelson.
145. Internal Stresses in Laminated Construction. By A. L. Heim, A. C. Knauss, and Louis Seutter.

No. Title

334. The Torsion of Members Having Sections Common in Aircraft Construction. By George W. Trayer and H. W. March.
347. A Method of Calculating the Ultimate Strength of Continuous Beams. By J. A. Newlin and Geo. W. Trayer.
356. Strength of Rectangular Flat Plates Under Edge Compression. By Louis Schuman and Goldie Back.
382. Elastic Instability of Members Having Sections Common in Aircraft Construction. By George W. Trayer and H. W. March.
473. Strength Tests of Thin-Walled Duralumin Cylinders in Compression. By Eugene E. Lundquist.
479. Stability of Thin-Walled Tubes under Torsion. By L. H. Donnell.
509. General Equations for the Stress Analysis of Rings. By Eugene E. Lundquist and Walter F. Burke.
582. A Theory for Primary Failure of Straight Centrally Loaded Columns. By Eugene E. Lundquist and Claude M. Fligg.
601. Torsion Tests of Tubes. By Ambrose H. Stang, Walter Ramberg, and Goldie Back.
615. Column Strength of Tubes Elastically Restrained against Rotation at the Ends. By William R. Osgood.
632. The Crinkling Strength and the Bending Strength of Round Aircraft Tubing. By William R. Osgood.
649. The "Pack" Method for Compressive Tests of Thin Specimens of Materials Used in Thin-Wall Structures. By C. S. Aitchison and L. B. Tuckerman.
656. The Column Strength of Two Extruded Aluminum-Alloy H-Sections. By William R. Osgood and Marshall Holt.
659. Effect of Service Stresses on Impact Resistance, X-Ray Diffraction Patterns, and Microstructure of 25S Aluminum Alloy. By J. A. Kies and G. W. Quick.

STRUCTURAL PROPERTIES OF AIRCRAFT STRUCTURES

REPORTS

18. Aerofoils and Aerofoil Structural Combinations. By Edgar S. Gorrell and H. S. Martin.
19. Periodic Stresses in Gyroscopic Bodies, with Applications to Air Screws. By A. F. Zahm.
    Part I.—The Gyroscopic Particle.
    Part II.—The Gyroscopic Three-Dimensional Body.
32. The Airplane Tensiometer. By L. J. Larson.
76. Analysis of Fuselage Stresses. By Edward P. Warner and Roy G. Miller.
82. Airplane Stress Analysis. By A. F. Zahm and L. H. Crook.
92. Analysis of Wing Truss Stresses. By Edward P. Warner and Roy G. Miller.
104. Torsion of Wing Trusses at Diving Speeds. By Roy G. Miller.
115. Bending Moments, Envelope, and Cable Stresses in Non-Rigid Airships. By C. P. Burgess.
143. Analysis of Stresses in German Airplanes. By Wilhelm Hoff.
180. The Influence of the Form of a Wooden Beam on its Stiffness and Strength—I. Deflection of Beams with Special Reference to Shear Deformations. By J. A. Newlin and G. W. Trayer.
181. The Influence of the Form of a Wooden Beam on its Stiffness and Strength—II. Form Factors of Beams Subjected to Transverse Loading Only. By J. A. Newlin and G. W. Trayer.

No. Title

188. The Influence of the Form of a Wooden Beam on its Stiffness and Strength—III. Stresses in Wood Members Subjected to Combined Column and Beam Action. By J. A. Newlin and G. W. Trayer.
214. Wing Spar Stress Charts and Wing Truss Proportions. By Edward P. Warner.
251. Approximations for Column Effect in Airplane Wing Spars. By Edward P. Warner and Mac Short.
329. The Torsional Strength of Wings. By C. P. Burgess.
344. The Design of Plywood Webs for Airplane Wing Beams. By George W. Trayer.
345. The Design of Airplane Wing Ribs. By J. A. Newlin and George W. Trayer.
348. Strength of Welded Joints in Tubular Members for Aircraft. By H. L. Whittemore and W. C. Brueggeman.
508. Analysis of 2-Spar Cantilever Wings with Special Reference to Torsion and Load Transference. By Paul Kuhn.
584. Strength of Welded Aircraft Joints. By W. C. Brueggeman.
608. Stress Analysis of Beams with Shear Deformation of the Flanges. By Paul Kuhn.
636. Approximate Stress Analysis of Multistringer Beams with Shear Deformation of the Flanges. By Paul Kuhn.

VIBRATION AND FLUTTER

REPORTS

285. A Study of Wing Flutter. By A. F. Zahm and R. M. Bear.
491. Vibration Response of Airplane Structures. By T. Theodorsen and A. G. Gelalles.
496. General Theory of Aerodynamic Instability and the Mechanism of Flutter. By Theodore Theodorsen.
629. On Some Reciprocal Relations in the Theory of Nonstationary Flows. By I. E. Garrick.
673. Experimental Verification of the Theory of Oscillating Airfoils. By Abe Silverstein and Upshur T. Joyner.
681. The Unsteady Lift of a Wing of Finite Aspect Ratio. By Robert T. Jones.

IX. AIRCRAFT MATERIALS

FABRIC

REPORTS

No. Title

5. Relative Worth of Improvements on Fabrics. By Goodyear Tire & Rubber Co.
6. Investigations of Balloon and Aeroplane Fabrics. By the United States Rubber Company.
   Part I.—Balloon and Aeroplane Fabrics. By Willis A. Gibbons and Omar H. Smith.
   Part II.—Skin Friction of Various Surfaces in Air. By Willis A. Gibbons.
16. The Stretching of the Fabric and the Deformation of the Envelope in Nonrigid Balloons:
   Part 1.—The Stretching of the Fabric and the Shape of the Envelope. By Rudolf Haas.
   Part 2.—The Deformation of the Envelope of the Siemens-Schuckert Airship. By Alexander Dietzius.
22. Fabrics for Aeronautic Construction. By Subcommittee on Standardization and Investigation of Material:
   Part 1.—Cotton Airplane Fabrics.
   Part 2.—Balloon Fabrics.
36. The Structure of Airplane Fabrics. By E. Dean Walen.
37. Fabric Fastenings. By E. Dean Walen and R. T. Fisher.
39. The Testing of Balloon Fabrics. By Junius David Edwards and Irwin L. Moore.
   Part I.—Characteristic Exposure Tests of Balloon Fabrics.
   Part II.—Use of Ultra-Violet Light for Testing Balloon Fabrics.

METAL

REPORTS

34. Aluminum and Its Light Alloys. By Paul D. Merica.
248. The Corrosion of Magnesium and of the Magnesium Aluminum Alloys Containing Manganese. By J. A. Boyer.
490. The Weathering of Aluminum Alloy Sheet Materials Used in Aircraft. By Willard Mutchler.
663. The Effect of Continuous Weathering on Light Metal Alloys Used in Aircraft. By Willard Mutchler.
670. Tensile Elastic Properties of 18:8 Chromium-Nickel Steel as Affected by Plastic Deformation. By D. J. McAdam, Jr., and R. W. Mebs.

WOOD

REPORTS

No. Title

35. The Strength of One-Piece, Solid, Built-Up and Laminated Wood Airplane Wing Beams. By John H. Nelson.
65. The Kiln Drying of Woods for Airplanes. By Harry D. Tiemann.
67. Supplies and Production of Aircraft Woods. By W. N. Sparhawk.
68. The Effect of Kiln Drying on the Strength of Airplane Woods. By T. R. C. Wilson.
84. Data on the Design of Plywood for Aircraft. By Armin Elmendorf.
85. Moisture-Resistant Finishes for Airplane Woods. By M. E. Dunlap.
354. Aircraft Woods: Their Properties, Selection, and Characteristics. By L. J. Markwardt.

OTHER MATERIALS

REPORTS

33. Self-Luminous Materials. By N. E. Dorsey.
38. Airplane Dopes and Doping. By W. H. Smith.
40. The Ferrosilicon Process for the Generation of Hydrogen. By E. R. Weaver, W. M. Berry, B. L. Bohnson, and B. D. Gordon.
41. Testing of Balloon Gas. By Junius David Edwards.
53. Properties and Preparation of Ceramic Insulators for Spark Plugs:
   Part I.—Methods of Measuring Resistance of Insulators at High Temperatures. By F. B. Silsbee and R. K. Honaman.
   Part II.—Electrical Resistance of Various Insulating Materials at High Temperatures. By R. K. Honaman and E. L. Fonseca.
   Part III.—Preparation and Composition of Ceramic Bodies for Spark-Plug Insulators. By A. V. Bleininger.
   Part IV.—Cements for Spark-Plug Electrodes. By H. F. Staley.
66. Glues Used in Airplane Parts. By S. W. Allen and T. R. Truax.

X. AIRCRAFT INSTRUMENTS

REPORTS

No. Title

2. Investigation of Pitot Tubes. By the United States Bureau of Standards.
   - Part 1.—The Pitot Tube and Other Anemometers for Aeroplanes. By W. H. Herschel.
   - Part 2.—The Theory of the Pitot and Venturi Tubes. By E. Buckingham.
8. General Specifications Covering Requirements of Aeronautic Instruments. By The National Advisory Committee for Aeronautics.
31. Development of Air Speed Nozzles. By A. F. Zahm.
81. Comparison of United States and British Standard Pitot-Static Tubes. By A. F. Zahm and R. H. Smith.
94. The Efficiency of Small Bearings in Instruments of the Type Used in Aircraft. By F. H. Norton.
100. Accelerometer Design. By F. H. Norton and Edward P. Warner.
110. The Altitude Effect on Air Speed Indicators. By Mayo D. Hersey, Franklin L. Hunt, and Herbert N. Eaton.
125. Aeronautic Instruments: Section I—General Classification of Instruments and Problems including Bibliography. By Mayo D. Hersey, Bureau of Standards.
126. Aeronautic Instruments: Section II—Altitude Instruments. By Bureau of Standards.
   - Part I. Altimeters and Barographs. By A. H. Mears, H. B. Henrickson, and W. G. Brombacher.
   - Part II. Precision Altimeter Design. By John B. Peterson and John R. Freeman, Jr.
   - Part III. Statoscopes and Rate-of-Climb Indicators. By Atherton H. Mears.
   - Part IV. Aerographs and Strut Thermometers. By John A. C. Warner.
127. Aeronautic Instruments: Section III—Aircraft Speed Instruments. By Bureau of Standards.
   - Part I. Air-Speed Indicators. By Franklin L. Hunt.
   - Part II. Testing of Air-Speed Meters. By H. O. Stearns.
   - Part III. Principles of Ground-Speed Measurement. By Franklin L. Hunt.
128. Aeronautic Instruments: Section IV—Direction Instruments. By Bureau of Standards.
   - Part I. Inclinometers and Banking Indicators. By W. S. Franklin and M. H. Stillman.
   - Part II. The Testing and Use of Magnetic Compasses for Airplanes. By R. L. Sanford.
   - Part III. Aircraft Compasses—Description and Classification. By John A. C. Warner.
   - Part IV. Turn Indicators. By R. C. Sylvander and E. W. Rounds.
129. Aeronautic Instruments: Section V—Power Plant Instruments. By Bureau of Standards.
   - Part I. Airplane Tachometers. By G. E. Washburn.
   - Part II. Testing of Airplane Tachometers. By R. C. Sylvander.
   - Part III. Thermometers for Aircraft Engines. By E. F. Mueller and R. M. Wilhelm.

No. Title

129. Aeronautic Instruments: Section V—Power Plant Instruments. By Bureau of Standards—Continued.
   - Part IV. Air Pressure and Oil Pressure Gages. By H. N. Eaton.
   - Part V. Gasoline Depth Gages and Flowmeters for Aircraft. By John A. C. Warner.
130. Aeronautic Instruments: Section VI—Oxygen Instruments. By F. L. Hunt, Bureau of Standards.
131. Aeronautic Instruments: Section VII—Aerial Navigation Instruments. By H. N. Eaton, Bureau of Standards.
132. Aeronautic Instruments: Section VIII—Recent Developments and Outstanding Problems. By F. L. Hunt, Bureau of Standards.
156. The Altitude Effect on Air-Speed Indicators—II. By H. N. Eaton and W. A. MacNair.
165. Diaphragms for Aeronautic Instruments. By M. D. Hersey.
199. Interference Tests on an N. A. C. A. Pitot Tube. By Elliott G. Reid.
206. Nonmetallic Diaphragms for Instruments. By H. N. Eaton and C. T. Buckingham.
246. Tables for Calibrating Altimeters and Computing Altitudes Based on the Standard Atmosphere. By W. G. Brombacher.
264. Differential Pressures on a Pitot-Venturi and a Pitot-Static Nozzle over 360° Pitch and Yaw. By R. M. Bear.
299. Investigation of Damping Liquids for Aircraft Instruments. By G. H. Keulegan.
310. Pressure Element of Constant Logarithmic Stiffness for Temperature Compensated Altimeter. By W. G. Brombacher and F. Cordero.
320. The Measurement of Fluctuations of Air Speed by the Hot-Wire Anemometer. By H. L. Dryden and A. M. Kuethe.
358. Temperature Coefficient of the Modulus of Rigidity of Aircraft Instrument Diaphragm and Spring Materials. By W. G. Brombacher and E. R. Melton.
369. Maneuverability Investigation of the F6C–3 Airplane with Special Flight Instruments. By C. H. Dearborn and H. W. Kirschbaum.
371. Present Status of Aircraft Instruments. By Subcommittee on Instruments, N. A. C. A.
388. Investigation of the Diaphragm-Type Pressure Cell. By Theodore Theodorsen.
398. Investigation of Damping Liquids for Aircraft Instruments—II. By M. R. Houseman and G. H. Keulegan.
420. Aircraft Speed Instruments. By K. Hilding Beij.
466. Aircraft Power-Plant Instruments. By Harcourt Sontag and W. G. Brombacher.
513. Experimental Investigation of the Robinson-Type Cup Anemometer. By M. J. Brevoort and U. T. Joyner.
551. Aircraft Compass Characteristics. By John B. Peterson and Clyde W. Smith.
606. Electrical Thermometers for Aircraft. By John B. Peterson and S. H. J. Womack.
666. Aircraft Rate-of-Climb Indicators. By Daniel P. Johnson.

XI. METEOROLOGY

REPORTS

No. Title

4. Preliminary Report on the Problem of the Atmosphere in Relation to Aeronautics. By Charles F. Marvin.
13. Meteorology and Aeronautics. By William R. Blair.
    Part I.—Physical Properties and Dynamics of the Atmosphere.
    Part II.—Topographic and Climatic Factors in Relation to Aeronautics.
    Part III.—Current Meteorology and its Use.
147. Standard Atmosphere. By Willis Ray Gregg.
216. The Reduction of Airplane Flight Test Data to Standard Atmosphere Conditions. By Walter S. Diehl and E. P. Lesley.
218. Standard Atmosphere—Tables and Data. By Walter S. Diehl.
245. Meteorological Conditions along Airways. By W. R. Gregg.
246. Tables for Calibrating Altimeters and Computing Altitudes Based on the Standard Atmosphere. By W. G. Brombacher.
247. Pressure of Air on Coming to Rest from Various Speeds. By A. F. Zahm.
297. The Reduction of Observed Airplane Performance to Standard Conditions. By Walter S. Diehl.
316. Tables for Pressure of Air on Coming to Rest from Various Speeds. By A. F. Zahm and F. A. Louden.
376. Some Approximate Equations for the Standard Atmosphere. By Walter S. Diehl.
403. Ice Prevention on Aircraft by Means of Engine Exhaust Heat and a Technical Study of Heat Transmission from a Clark Y Airfoil. By Theodore Theodorsen and William C. Clay.
538. Altitude-Pressure Tables Based on the United States Standard Atmosphere. By W. G. Brombacher.

XII. NOMENCLATURE

REPORTS

No. Title

9. Nomenclature for Aeronautics. By the National Advisory Committee for Aeronautics. (Superseded by Technical Report No. 474.)
15. Nomenclature for Aeronautics. By the National Advisory Committee for Aeronautics. (Superseded by Technical Report No. 474.)
25. Nomenclature for Aeronautics. By the National Advisory Committee for Aeronautics. (Superseded by Technical Report No. 474.)
91. Nomenclature for Aeronautics. (Superseded by Technical Report No. 474.)
157. Nomenclature for Aeronautics. By the National Advisory Committee for Aeronautics. (Superseded by Technical Report No. 474.)
240. Nomenclature for Aeronautics. By the National Advisory Committee for Aeronautics. (Superseded by Technical Report No. 474.)
474. Nomenclature for Aeronautics. By the National Advisory Committee for Aeronautics.

XIII. RESEARCH FACILITIES AND TECHNIQUE

REPORTS

No. Title

32. The Airplane Tensiometer. By L. J. Larson.
44. The Altitude Laboratory for the Testing of Aircraft Engines. By H. C. Dickinson and H. G. Boutell.
72. Wind Tunnel Balances. By Edward P. Warner and F. H. Norton.
73. The Design of Wind Tunnels and Wind Tunnel Propellers. By Edward P. Warner, F. H. Norton, and C. M. Hebbert.
74. Construction of Models for Tests in Wind Tunnels. By F. H. Norton.
83. Wind Tunnel Studies in Aerodynamic Phenomena at High Speed. By F. W. Caldwell and E. N. Fales.
98. Design of Wind Tunnels and Wind Tunnel Propellers, II. By F. H. Norton and Edward P. Warner.
146. The Six-Component Wind Balance. By A. F. Zahm.
160. An Airship Slide Rule. By E. R. Weaver and S. F. Pickering.
166. The Aerodynamic Plane Table. By A. F. Zahm.
176. A Constant Pressure Bomb. By F. W. Stevens.
185. The Resistance of Spheres in Wind Tunnels and in Air. By David L. Bacon and Elliott G. Reid.
195. Standardization Tests of N. A. C. A. No. 1 Wind Tunnel. By Elliott G. Reid.
227. The Variable Density Wind Tunnel of the National Advisory Committee for Aeronautics. By Max M. Munk and Elton W. Miller.
231. Investigation of Turbulence in Wind Tunnels by a Study of the Flow about Cylinders. By H. L. Dryden and R. H. Heald.
250. Description of the N. A. C. A. Universal Test Engine and Some Test Results. By Marsden Ware.
252. The Direct Measurement of Engine Power on an Airplane in Flight with a Hub Type Dynamometer. By W. D. Gove and M. W. Green.
274. The N. A. C. A. Photographic Apparatus for Studying Fuel Sprays from Oil Engine Injection Valves and Test Results from Several Researches. By Edward G. Beardsley.
275. The Effect of the Walls in Closed Type Wind Tunnels. By George J. Higgins.
300. The Twenty-Foot Propeller Research Tunnel of the National Advisory Committee for Aeronautics. By Fred E. Weick and Donald H. Wood.
309. Joint Report on Standardization Tests on N. P. L. R. A. F. 15 Airfoil Model. By Walter S. Diehl.
320. The Measurement of Fluctuations of Air Speed by the Hot-Wire Anemometer. By H. L. Dryden and A. M. Kuethe.
322. Investigation of Air Flow in Open-Throat Wind Tunnels. By Eastman N. Jacobs.
342. Effect of Turbulence in Wind Tunnel Measurements. By H. L. Dryden and A. M. Kuethe.

No. Title

361. Experimental Determination of Jet Boundary Corrections for Airfoil Tests in Four Open Wind Tunnel Jets of Different Shapes. By Montgomery Knight and Thomas A. Harris.
387. The Vertical Wind Tunnel of the National Advisory Committee for Aeronautics. By Carl J. Wenzinger and Thomas A. Harris.
392. Reduction of Turbulence in Wind Tunnels. By Hugh L. Dryden.
410. The Theory of Wind-Tunnel Wall Interference. By Theodore Theodorsen.
412. The 7 by 10 Foot Wind Tunnel of the National Advisory Committee For Aeronautics. By Thomas A. Harris.
416. The N. A. C. A. Variable-Density Wind Tunnel. By Eastman N. Jacobs and Ira H. Abbott.
429. The N. A. C. A. Apparatus for Studying the Formation and Combustion of Fuel Sprays and the Results from Preliminary Tests. By A. M. Rothrock.
448. Improved Apparatus for the Measurement of Fluctuations of Air Speed in Turbulent Flow. By W. C. Mock, Jr., and H. L. Dryden.
459. The N. A. C. A. Full-Scale Wind Tunnel. By Smith J. DeFrance.
461. Interference on an Airfoil of Finite Span in an Open Rectangular Wind Tunnel. By Theodore Theodorsen.
463. The N. A. C. A. High-Speed Wind Tunnel and Tests of Six Propeller Sections. By John Stack.
470. The N. A. C. A. Tank—A High-Speed Towing Basin for Testing Models of Seaplane Floats. By Starr Truscott.
478. Experimental Verification of the Theory of Wind-Tunnel Boundary Interference. By Theodore Theodorsen and Abe Silverstein.

No. Title

524. A Turbulence Indicator Utilizing the Diffusion of Heat. By G. B. Schubauer.
547. Wind-Tunnel Interference with Particular Reference to Off-Center Positions of the Wing and to the Downwash at the Tail. By Abe Silverstein and James A. White.
557. Preliminary Tests in the N. A. C. A. Free-Spinning Wind Tunnel. By C. H. Zimmerman.
558. Turbulence Factors of N. A. C. A. Wind Tunnels as Determined by Sphere Tests. By Robert C. Platt.
581. Measurements of Intensity and Scale of Wind-Tunnel Turbulence and Their Relation to the Critical Reynolds Number of Spheres. By Hugh L. Dryden, G. B. Schubauer, W. C. Mock, Jr., and H. K. Skramstad.
598. Alternating-Current Equipment for the Measurement of Fluctuations of Air Speed in Turbulent Flow. By W. C. Mock, Jr.
607. Spinning Characteristics of the XN2Y–1 Airplane Obtained from the Spinning Balance and Compared with Results from the Spinning Tunnel and from Flight Tests. By M. J. Bamber and R. O. House.
609. Experimental Investigation of Wind-Tunnel Interference on the Downwash behind an Airfoil. By Abe Silverstein and S. Katzoff.
646. The Compressibility Burble and the Effect of Compressibility on Pressures and Forces Acting on an Airfoil. By John Stack, W. F. Lindsey, and Robert E. Littell.
669. Airfoil Section Data Obtained in the N. A. C. A. Variable-Density Tunnel as Affected by Support Interference and Other Corrections. By Eastman N. Jacobs and Ira H. Abbott.

XIV. ACOUSTICS

REPORTS

No. Title

10. Mufflers for Aeronautic Engines. By H. Diederichs and G. B. Upton.
55. Investigation of the Muffling Problem for Airplane Engines. By G. B. Upton and V. R. Gage.

No. Title

395. A New Principle of Sound Frequency Analysis. By Theodore Theodorsen.
526. Noise from Two-Blade Propellers. By E. Z. Stowell and A. F. Deming.

XV. MISCELLANEOUS

REPORTS

No. Title

198. Astronomical Methods in Aerial Navigation. By K. Hilding Beij.
308. Aircraft Accidents—Methods of Analysis. By Special Committee on the Nomenclature, Subdivision, and Classification of Aircraft Accidents.
357. Aircraft Accidents—Method of Analysis. By Committee on Aircraft Accidents.

No. Title

498. Improved Airplane Windshields to Provide Vision in Stormy Weather. By William C. Clay.
576. Aircraft Accidents—Method of Analysis. By Committee on Aircraft Accidents.
686. Stability of Castering Wheels for Aircraft Landing Gears. By Arthur Kantrowitz.

INDEX

○